

**Summary**  
of the  
**Final Environmental Impact Statement**  
for the  
**STILLWATER NATIONAL WILDLIFE REFUGE COMPLEX**  
**COMPREHENSIVE CONSERVATION PLAN**  
and  
**BOUNDARY REVISION**  
**Churchill and Washoe Counties, Nevada**

Type of Action:	Administrative
Lead Agency:	U.S. Department of the Interior, Fish and Wildlife Service
Cooperating Agencies:	U.S. Bureau of Indian Affairs Nevada Division of Wildlife
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**Abstract:** This Final Environmental Impact Statement (EIS) for the Stillwater National Wildlife Refuge Complex Comprehensive Conservation Plan (CCP) and Boundary Revision (Final CCP EIS) describes and evaluates five alternatives for management. The Stillwater National Wildlife Refuge (NWR) Complex is comprised of Stillwater NWR, Fallon NWR, Stillwater Wildlife Management Area (WMA), and Anaho Island NWR. The No Action Alternative (Alternative A) would retain the existing boundaries and baseline management as outlined in the 1987 Management Plan for Stillwater WMA and modified by the U.S. Fish and Wildlife Service's (Service) water rights acquisition program. Alternative B would result in the lands within Stillwater WMA reverting back to U.S. Bureau of Reclamation management or other public land status. Management would focus on providing fall and winter habitat for waterfowl and opportunities for waterfowl hunting on Stillwater NWR, and breeding habitat for waterbirds on Fallon NWR. Under Alternative C, the Service would seek legislation to expand Stillwater NWR to include much of Stillwater WMA and Fallon NWR to conserve additional riparian and dune habitat. This alternative would emphasize the approximation of natural biological diversity with adjustments to enhance breeding habitat for waterbirds and fall and winter habitat for waterfowl, and would provide enhanced opportunities for wildlife observation and environmental

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education. Similar to Alternative C, legislation would be sought to expand Stillwater NWR's boundary to include much of Stillwater WMA and Fallon NWR to conserve additional riparian and sand dune habitat under Alternative D. Management would focus on restoring natural hydrologic patterns and other ecological processes. Visitor services management would focus on providing opportunities for wildlife observation and environmental education. Alternative E (the preferred Alternative) closely follows the structure of Draft CCP EIS Alternative C, Option 2, as modified by comments received. Alternative E incorporates elements of all Alternatives presented in the Draft CCP EIS, but remains within the range of options analyzed in the Draft CCP EIS. In all alternatives, Anaho Island NWR would be managed much as it has in the past, with continued emphasis on protecting the American white pelicans and other colonial nesting birds that use the island.

The issues addressed in this Final CCP EIS include the potential effects of the alternatives on populations of fish, wildlife, plants, and their habitat; priority public uses of the National Wildlife Refuge System; other public uses; cultural resources; Newlands Irrigation Project operations; Naval Air Station-Fallon training; and the local economy. The major factors limiting achievement of the purposes of Stillwater NWR and Fallon NWR include an insufficient volume of quality water inflow, nonnative species (including livestock), and contaminants. The Final CCP EIS also addresses the compatibility of public use of the refuges.

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# SUMMARY

## INTRODUCTION

The U.S. Fish and Wildlife Service (Service) began developing a comprehensive conservation plan (CCP) for the Stillwater National Wildlife Refuge (NWR) Complex in early 1997. The Final Environmental Impact Statement for the Stillwater NWR Complex Comprehensive Conservation Plan and Boundary Revision (Final CCP EIS) summarized in this document identifies and evaluates five alternatives for managing the Stillwater NWR Complex for the next 15 years. Each alternative consists of two main parts: (1) a boundary revision for Stillwater NWR, and (2) the framework of a CCP, including refuge goals, objectives, and strategies, for achieving the purposes for which each refuge was established and for contributing toward the mission of the National Wildlife Refuge System. The Stillwater NWR Complex currently includes Stillwater NWR, Stillwater Wildlife Management Area (WMA), Fallon NWR, and Anaho Island NWR, which are located in west-central Nevada (Maps 1 and 2).

The Stillwater NWR Complex makes a substantial contribution to the conservation of wildlife and their habitat in the western Great Basin. It encompasses a great diversity of habitats, including freshwater and brackish water marshes, alkali playas, salt desert shrublands, a 25 mile long sand dune complex, riverine riparian areas, and an island in a desert lake. These habitats attract nearly 400 species of vertebrate wildlife (more than 260 bird species) and countless species of invertebrates. Waterfowl, shorebirds, and other waterbirds are abundant, especially during spring and fall migration.

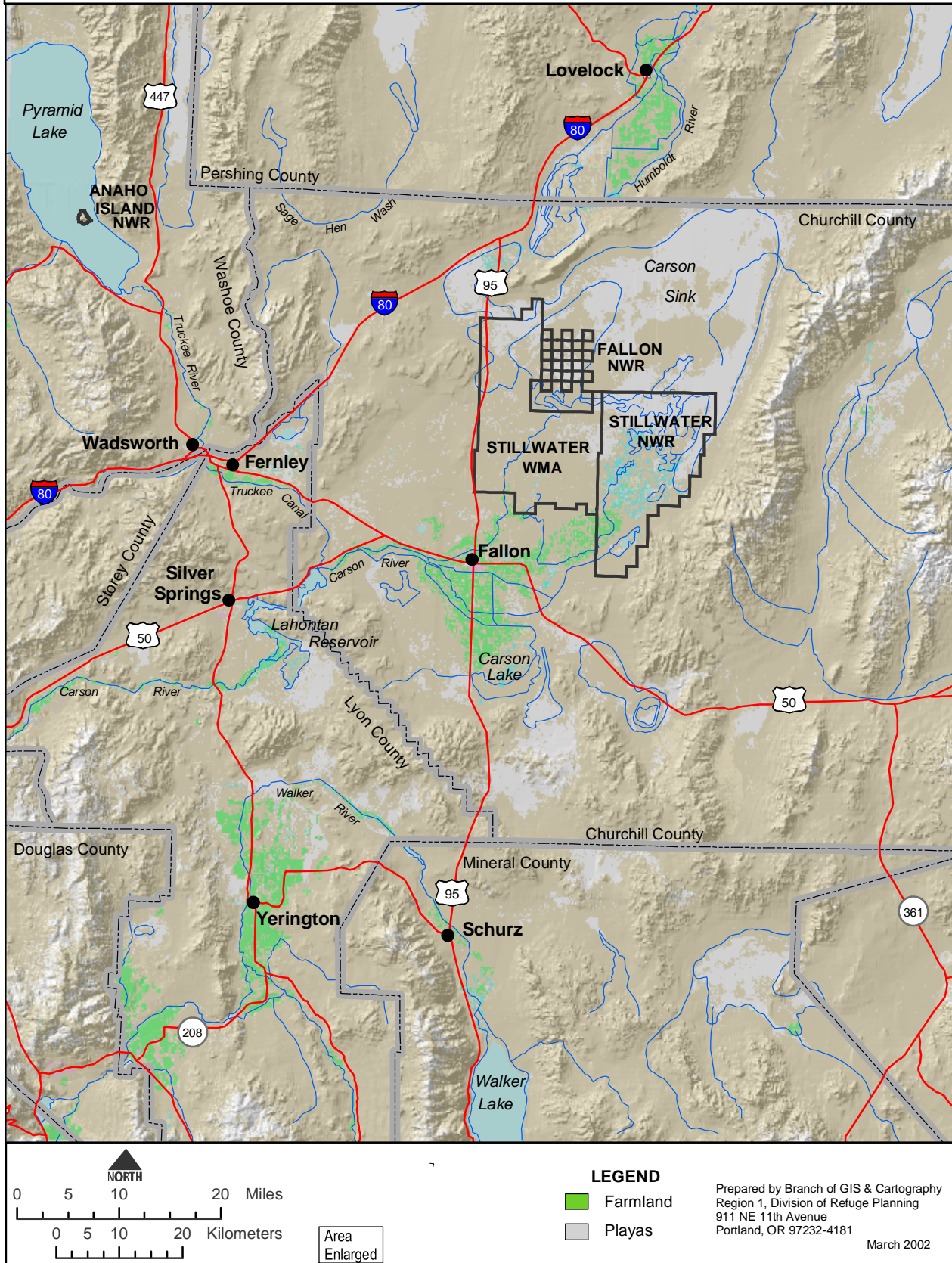
Human association with Stillwater Marsh goes back at least 12,000 years. The culture and traditions of the Cattail-eater Northern Paiutes, *Toedokado*, is embodied in the area's cultural resources. Because Stillwater Marsh was such an ideal place for humans to live over the millennia, Stillwater NWR contains some of the richest cultural resources in the Great Basin

Map 1 General Location





## MAP 2 GENERAL AREA



The immense richness and abundance of wildlife and habitats in a desert environment continues to provide a striking setting for hunting, observing, and learning about wildlife in the Great Basin. Waterfowl hunting has a long history at Stillwater Marsh and this tradition will continue. In recent years, birdwatching and environmental education have grown in popularity. Individuals and several conservation organizations have been instrumental in ensuring the long-term viability of the wetlands on Stillwater NWR.

The contiguous Stillwater NWR, Stillwater WMA, and Fallon NWR are located about 6 miles northeast of Fallon, Churchill County, Nevada. Stillwater NWR encompasses about 79,570 acres of Federal land, Stillwater WMA about 65,603 acres, and Fallon NWR about 17,848 acres, for a combined total of 163,021 acres of Federal land. Non-Federal inholdings within the existing approved boundaries total about 59,708 acres.

Anaho Island NWR, a part of the Pyramid Lake Indian Reservation, is about 30 miles northeast of Reno, Washoe County, Nevada. The Paiute name for Anaho Island is “Pai-sa-ka-tu-du” which means “... the dry island sitting out there all by itself...” The refuge encompasses the entire island, which has fluctuated in size from 220 to 745 acres in recent history due to the fluctuating water levels of Pyramid Lake. In the summer of 1997, the island was approximately 575 acres, and in the winter of 2001 it was down to 523 acres as the water level of Pyramid Lake continued to rise.

## Proposed Action

The proposed action is to (1) identify a boundary configuration for Stillwater NWR that would best facilitate the achievement of the purposes for which the refuge was established, and (2) develop and implement a CCP for the Stillwater NWR Complex that best achieves the purposes of the individual refuges, contributes to the mission of the National Wildlife Refuge System, is consistent with the principles of sound fish and wildlife management, and addresses relevant mandates and the major issues identified during scoping. Expansion of the approved boundary of Stillwater NWR would allow the Service to negotiate with willing participants within this boundary to acquire land. Lands acquired by the Service would be managed as part of the Stillwater NWR Complex.

The top priority of the CCP would be to provide goals, objectives, and strategies to conserve and protect native wildlife and their habitat. This priority stems from the purposes of Stillwater NWR and the fundamental mission of the Refuge System. The purposes of Stillwater NWR as described in Public Law 101-618 § 206(b)(2) are to:

“To ensure that the Refuge System’s fish, wildlife, and plant resources endure, the law of the land now clearly states that their needs must come first.”

*U.S. Fish and Wildlife Service (1999)*

1. Maintain and restore natural biological diversity within the refuge,
2. Provide for the conservation and management of fish and wildlife and their habitats within the refuge,
3. Fulfill the international treaty obligations of the United States with respect to fish and wildlife, and,
4. Provide opportunities for scientific research, environmental education, and fish and wildlife oriented recreation.

“...We will make refuges welcoming, safe, and accessible, with a variety of opportunities for visitors to enjoy and appreciate America’s fish, wildlife, and plants...”

*U.S. Fish and Wildlife Service (1999)*

Secondarily, the CCP would provide goals, objectives, and strategies to facilitate opportunities for wildlife-dependent public uses, such as hunting, environmental education and interpretation, and wildlife observation and photography. Stillwater NWR was established in part to provide opportunities for environmental education

and wildlife-dependent recreation, as well as scientific research. Furthermore, continued use of Stillwater NWR for wildlife-dependent recreation provides people with a better understanding and deeper appreciation of wildlife and the importance of conserving their habitat.

## Purpose of and Need for Action

The purpose of developing a CCP for the Stillwater NWR Complex is to provide managers with a 15 year strategy for achieving refuge purposes and contributing toward the mission of the National Wildlife Refuge System that is consistent with sound principles of fish and wildlife conservation and legal mandates. The purpose of revising the boundary of Stillwater NWR is to help the Service achieve the purposes of the refuge.

The National Wildlife Refuge System Administration Act of 1966, as amended (Refuge System Administration Act), requires that a CCP be developed for each refuge. Stillwater NWR does not have a management plan that provides direction for managing wildlife, habitat, and public uses on the refuge under the management direction established by Title II of the Truckee-Carson-Pyramid Lake Water Rights Settlement Act of 1990 ( P.L. 101-618) and the increased volume of water to be delivered to the refuge, as authorized by the Public Law. Fallon NWR does not have a management plan for managing wildlife, habitat, and public uses on the refuge under the management direction established by Executive Order 5606 in 1931. Anaho Island NWR does not have a management plan fulfilling the purposes established by Executive Order 1819 and P.L. 101-618. Compatibility determinations have not been completed for any of the public uses occurring on Stillwater NWR and Fallon

A **compatible use** is a public use of a refuge that, in the sound professional judgement of the Refuge Manager, will not interfere with or detract from the ability to fulfill refuge purposes and the mission of the Refuge System. A **compatibility determination** is a document signed by the Refuge Manager signifying that a proposed or existing use is either compatible or not compatible.



NWR. A CCP is needed to resolve several issues with respect to wildlife and visitor services management on the Stillwater NWR Complex, including water management priorities, control of noxious weeds, livestock grazing, contaminants, and managing wildlife-dependent recreational activities.

## **Decisions to be Made**

The decisions to be made by the *California/Nevada Operations Manager of the Fish and Wildlife Service* are (1) the selection of an alternative to implement as the Stillwater NWR Complex CCP, and (2) the identification of the alternative boundary revision that would best contribute to achieving the purposes for which the refuge was established. These decisions would be made in full recognition of the environmental effects of each alternative considered. The decisions will be designated in a Record of Decision (ROD) to be published no sooner than 30 days after a notice of availability (NOA) for the Final CCP EIS is published in the Federal Register. Implementation of the CCP will begin following publishing a summary of the ROD in the *Federal Register*. The selected boundary revision alternative will be submitted to Congress for approval.

## **BACKGROUND INFORMATION**

### **Establishment History and Purposes of the Stillwater NWR Complex**

Anaho Island NWR was established in 1913 by Executive Order 1819 as a " . . . preserve and breeding ground for native birds." P.L. 101-618 (§210(b)(2)) more narrowly defined the purpose of Anaho Island NWR, stating that it was to be managed and administered " . . . for the benefit and protection of colonial nesting species and other migratory birds." The P. L 101-618 also recognized that Anaho Island is part of the Pyramid Lake Indian Reservation, but managed by the Service as a component of the Refuge System. A memorandum of understanding between the Service and the Pyramid Lake Paiute Tribe was signed in March 1992 that outlined the terms of the Service's management and administration of the island.

Fallon NWR is about 17,850 acres of Federal land and was established in 1931 by Executive Order 5606 "as a refuge and breeding ground for birds and other wild animals." It has been managed as part of the Stillwater WMA.

Stillwater WMA and Stillwater NWR were established through a 50 year agreement signed in 1948 by the Truckee-Carson Irrigation District, Nevada State Board of Fish and Game Commissioners, and the Service (Tripartite Agreement). Although the agreement expired in November 1998, the Service continues to cooperatively manage the Stillwater WMA with the Bureau of Reclamation under most provisions of the Tripartite Agreement (U.S. Bureau of Reclamation 2000). When Stillwater WMA was established, it encompassed about 200,000 acres of land, of which about 140,000 acres was public land originally withdrawn by the Bureau of Reclamation for Newlands Irrigation Project purposes. Stillwater WMA was established for the purposes of conserving and managing wildlife and their habitat, and for public hunting.

Under the Tripartite Agreement, livestock grazing and muskrat production on Stillwater WMA were to be managed commensurate with wildlife conservation. Stillwater NWR was established in 1949 as a wildlife sanctuary and closed to hunting. Adjacent to the public hunting area, it encompassed about 24,200 acres of Federal land, and comprised the southern end of the existing boundary of Stillwater NWR.

In 1990, P.L. 101-618 (§210(b)(1)) expanded the approved boundary of Stillwater NWR to encompass Stillwater Marsh, most of which was previously a part of the Stillwater WMA (Map 3). P.L. 101-618 also mandated that the Service make recommendations to Congress on any additional boundary revisions that may be needed to help carry out refuge purposes and other provisions of the law.

P.L. 101-618 specified four purposes for which the Service must manage Stillwater NWR: (1) maintaining and restoring natural biological diversity within the refuge; (2) providing for the conservation and management of fish and wildlife and their habitats within the refuge; (3) fulfilling international treaty obligations of the United States with respect to fish and wildlife; and (4) providing opportunities for scientific research, environmental education, and fish and wildlife oriented recreation.

The **natural biological diversity** of the Stillwater area refers to the variety within and among biological communities that evolved in the area under geological, evolutionary, and other ecological processes.

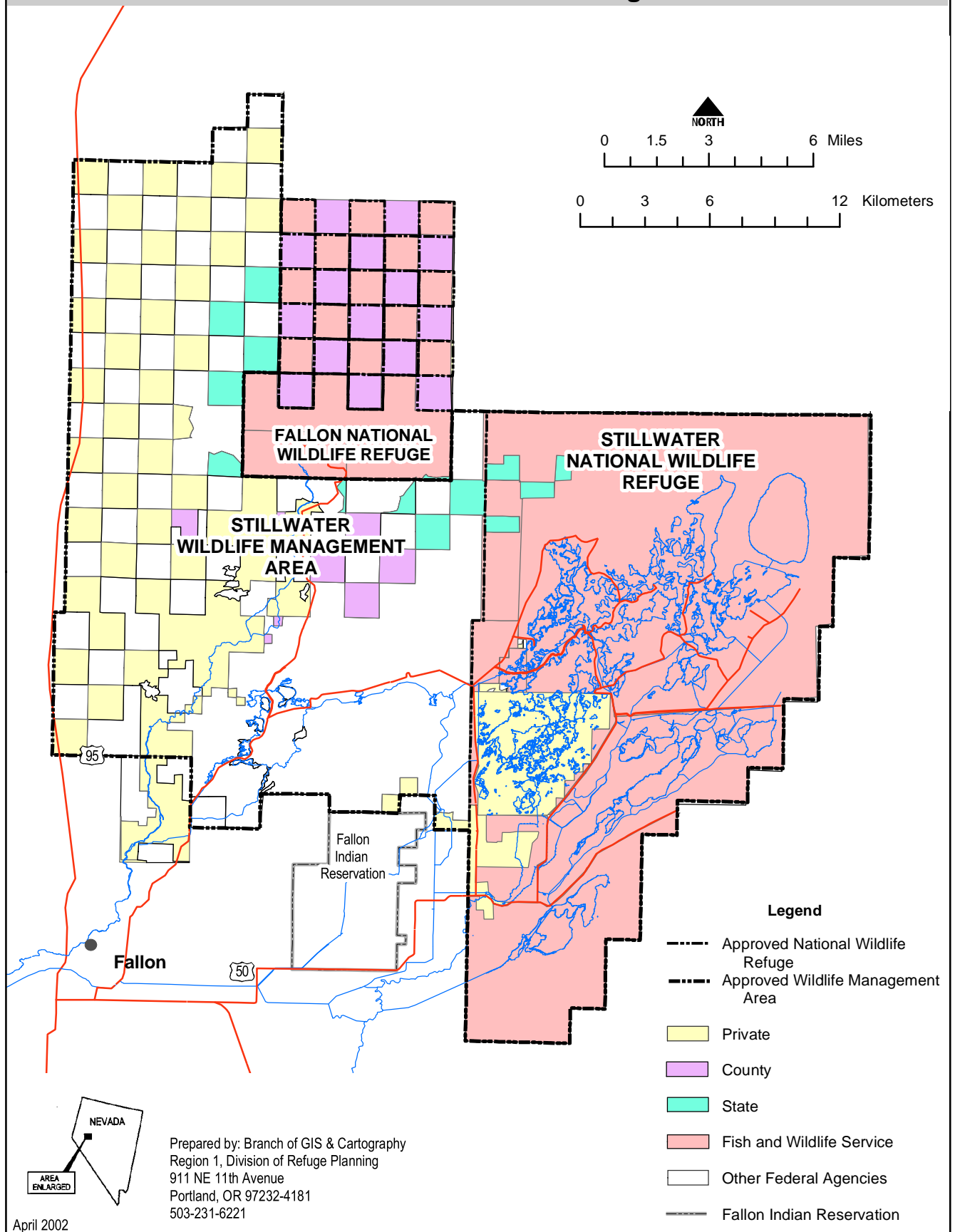
P.L. 101-618 shifted the legal authority for managing the lands now within Stillwater NWR from the Tripartite Agreement to the Refuge System Administration Act. The Refuge System Administration Act directs that wildlife conservation be the single highest priority of refuge management. Additionally, all wildlife-dependent public uses are to be given equal emphasis in planning and management, priority public uses are to be given higher consideration than all other public uses, and all uses must be shown to be compatible with refuge purposes before they can be allowed to occur on the refuge.

## **Status of the Wetlands Water Rights Acquisition Program**

The Final CCP EIS examines five alternative strategies for managing the water being acquired for the refuge. Subsection 206(a) of P.L. 101-618 directs the Secretary of the Interior to acquire enough water and water rights, in conjunction with the State of Nevada and other parties, to sustain a long-term average of 25,000 acres of primary wetland habitat in the Lahontan Valley. An average of 14,000 acres of wetland habitat would be sustained over the long-term on Stillwater NWR. Another 10,200 acres would be sustained at Carson Lake, and the remaining 800 acres would be sustained on the Fallon Paiute-Shoshone Indian Reservation.

The *Final Environmental Impact Statement for Water Rights Acquisition for Lahontan Valley Wetlands* (WRAP EIS; U.S. Fish and Wildlife Service 1996a) and its Record of Decision (U.S. Fish and Wildlife Service 1996b) describe the water rights acquisition program the Service began

**Map 3. Land Ownership within Stillwater National Wildlife Refuge, Stillwater Wildlife Management Area and Fallon National Wildlife Refuge.**



to implement in November 1996. The WRAP EIS estimated that 125,000 acre-feet of water would be needed to sustain 25,000 acres of wetland habitat, and that 70,000 acre-feet of water would be needed to maintain 14,000 acres of wetlands on Stillwater NWR. Potential water sources include agricultural drainwater, spill water, acquired water rights and leased water from the Carson Division of the Newlands Irrigation Project, acquired water rights from the Middle Carson River just above Lahontan Reservoir, conserved water at the Naval Air Station-Fallon (NAS-Fallon), and groundwater. Spill water refers to water that is released or spilled from Lahontan Reservoir during high-water conditions to minimize flood potential.

In partnership with the State of Nevada, The Nature Conservancy, and the Nevada Waterfowl Association, the Service has been acquiring water rights for the protection and enhancement of Lahontan Valley wetlands. The first water rights for the wetlands were purchased in 1989 by the Nevada Waterfowl Association. As of September 2001, approximately 30,650 acre-feet of water rights in the Carson Division of the Newlands Irrigation Project had been acquired, including 21,116 acre-feet by the Service for Stillwater NWR, 8,150 acre-feet by the State of Nevada and Nevada Waterfowl Association for Carson Lake, and 1,334 acre-feet by the Bureau of Indian Affairs for the Fallon Paiute-Shoshone Indian Reservation wetlands.

## **PLANNING ISSUES**

### **Summary of Public Involvement**

In March 1997, three public scoping meetings were conducted in Fallon, Fernley, and Reno, Nevada. The Service subsequently conducted open-house workshops in both Fallon and Reno in March, April, and July 1997. Prior to the open-house workshops, the Service sent letters to all individuals, organizations, and agencies on the WRAP EIS mailing list to ask if they would like to be placed on the Stillwater NWR Complex CCP mailing list. The Service also sent letters to the landowners within the boundaries of Stillwater NWR and Stillwater WMA and in adjacent areas, summarizing the boundary revision assessment, inviting them to the workshops, and encouraging input on issues and alternatives to consider. The Service also met with a variety of other Federal agencies, the Nevada Division of Wildlife, local Tribes, municipal governments, and several private groups on a number of occasions. Seven Planning Updates were sent out to all on the mailing list.

The Draft CCP EIS was made available for public comment on April 14, 2000 (65 Federal Register 20192). The 120-day comment period resulted in 54 contributors providing 1,004 comments addressing several different issues within the several broad categories. Over 60 percent of the comments concerned management issues ranging from water delivery strategies to implementation of habitat management tools; 15 percent were related to visitor services activities, including the priority wildlife-dependent recreational activities identified in the Refuge System Administration Act; 7 percent provided editorial comments or corrections to the Draft CCP EIS; 6 percent related Draft CCP EIS objectives and strategies to relevant policies and legal mandates; 5 percent covered the Draft CCP EIS development process and coordination between

the various stakeholders; 5 percent were related to the National Environmental Policy Act (NEPA) process; and less than 1 percent related to law enforcement issues.

Between August 24, 2000 and February 26, 2001, the Service met with a Nevada Division of Wildlife (NDOW) sponsored working group ten times to discuss concerns expressed during the public comment period. The working group included representatives from NDOW, Churchill County, the Friends of Stillwater Coalition, Nevada Waterfowl Association, Lahontan Wetlands Coalition, Toiyabe Chapter of the Sierra Club, Lahontan Audubon Society, the Nevada Board of Wildlife Commissioners, the Canvasback Gun Club, and the National Wildlife Refuge Association. Topics discussed include the Stillwater NWR boundary revision; water management, including seasonal delivery and distribution between the sanctuary and hunt areas; non-consumptive public uses, such as wildlife observation and photography, environmental education and interpretation; and consumptive public use, such as waterfowl and other species hunting; public access; fishing; trapping for muskrat and beaver; and predator control. A summary of the issues discussed at the working group meetings was included in Stillwater Complex Planning Update #7, which was distributed in July 2001.

## **Summary of Major Issues**

Six major issues were identified during the public scoping process, internal review, and public comment period for the Draft CCP EIS. Each of the major issues described below identify potential effects that a revised boundary or CCP could have on a particular resource area. They were considered during the development of alternatives and evaluation of potential impacts.

### **Potential Effects on Populations of Fish, Wildlife, and Plants**

Wildlife management at Stillwater NWR, Stillwater WMA, and Fallon NWR has traditionally focused on game species, especially waterfowl. Thus, concern was raised that any changes to this traditional focus, such as any changes in water management strategies, controlling or not controlling certain nest predators, and fisheries management, may affect waterfowl. In recent years, other migratory birds such as shorebirds and colonial nesting species have been receiving more management attention. Given the current directive to manage Stillwater NWR to conserve the natural biological diversity within the refuge, which includes all native species of fish, wildlife, and plants, there is interest in the effects that future management may have on these other groups of organisms. Boundary revisions within the Stillwater NWR Complex can also affect populations of animals and plants, primarily through increased protection and restoration of sensitive habitats such as riparian and dune habitats. Another issue of concern, given the high importance of providing wildlife-dependent recreational uses on Stillwater NWR, is the potential adverse impacts to wildlife resulting from people walking, driving, boating, hunting, and approaching wildlife in wildlife habitat. Continued protection of colony nesting birds at Anaho Island is the main issue with respect to Anaho Island NWR.



## Potential Effects on Habitat and Ecosystem Functioning

Methods of managing water and vegetation can have major effects, positive or negative, on animal and plant populations. The effects of the CCP on habitat management, including the selection of management methods and intensity of use, is of concern to many people. Most public comments on habitat management addressed the management of water and livestock, and their effects on habitat quality. Another important habitat issue on the Stillwater NWR Complex is the effect that different management strategies have on the distribution and abundance of several nonnative invasive plant species, such as saltcedar, perennial pepperweed, and cheatgrass. This issue applies to all units in the Complex. Several water-borne contaminants are also of concern. There is much interest in the effects that managing newly acquired water rights will have on wetland habitat on Stillwater NWR. The major habitat areas that could be affected by a boundary revision are the Carson River corridor, the sand dune complex, a vast expanse of salt desert shrub habitat, and the southwestern portion of the Carson Sink.

## Potential Effects on Recreational, Educational, and Interpretive Opportunities

Many people, including Service personnel, recognize the great potential that the Stillwater NWR Complex has for providing high quality opportunities for wildlife-dependent recreational uses. The Service has clear direction to facilitate compatible wildlife-dependent recreational uses on Stillwater NWR. Two main issues surfaced during scoping:

- (1) members of the hunting public and others have asked that the waterfowl hunt program remain much as it is today, including no change in the boundary of the hunt zone; and
- (2) people representing a variety of interests have asked that the Service provide better facilities and information for birdwatchers, environmental educators, wildlife photographers, and other people interested in learning about the refuge's wildlife, habitats, and cultural resources.

Although many issues were brought to the attention of the Service, these appear to be the central issues. Interest was also expressed in raising the limit on motorboats to 15 horsepower during the hunting season.

Other issues include the potential effects on opportunities for horseback riding, camping, access to desert areas, and hunting in upland habitats. For example, in contrast to some people envisioning additional opportunities created by expansion of Stillwater NWR's boundary (e.g., for birdwatching along the Carson River), others expressed concern that it would diminish opportunities by restricting road access and disallowing certain activities (e.g., coyote and jackrabbit hunting, and off-road vehicles).

- **Potential Effects on Cultural Resources.** Habitat management activities, facilities maintenance, recreational use on the refuge, and a variety of environmental factors have the potential to affect cultural resources on the refuge. Cultural resources on Stillwater NWR

and WMA are essential elements of individual and group identity for members of the Fallon Paiute-Shoshone Tribe. The cultural resources on Stillwater NWR and WMA are some of the most important cultural resources in Nevada, and the entire Stillwater Marsh has been placed on the National Register of Historic Places. Although cultural resources, especially archeological sites, pervade Stillwater Marsh, they are fragile, easily disturbed and destroyed, and are nonrenewable. Cultural resources are small and subtle compared to the surrounding landscape and contemporary features like roads, ditches, and visitor facilities.

The most critical issue with respect to the CCP being prepared and potential boundary revision revolves around the basic question: How should cultural resources be protected and interpreted, given the need to manage wildlife habitat and public use of Stillwater NWR? Specific issues that need to be addressed include, (a) providing adequate protection of cultural resources from inadvertent disturbance by the public, while still allowing the public to enjoy a wildlife and cultural experience on the refuge; (b) reducing illegal artifact collecting and looting, while still allowing hunters and other recreationists to access the most archaeologically sensitive areas of the marsh; (c) implementing an environmental education program that incorporates accurate archaeological and cultural information including appropriate consultation with the Fallon Paiute Shoshone Tribe; and (d) the effects of manipulating water levels, and the replacement and construction of necessary infrastructure on cultural resources, and the potential mitigation of these activities.

- **Potential Effects on the Local Agriculture and Socio-Economy, and the Newlands Irrigation Project.** The Service was encouraged to look into ways to maximize the use of spill water and to reassess the volume and water quality of drainwater and groundwater reaching Stillwater NWR. Another suggestion was to reevaluate water rights acquisitions based on recent adjustments to the 1988 Newlands Project Operating Criteria and Procedures, as amended (1997 OCAP) for the Newlands Irrigation Project. Because the Service will have a considerable portion of water rights in the Carson Division, changes in the seasonal water-delivery pattern has the potential to affect Newlands Project operations and Truckee River resources. Any changes to livestock grazing management on Stillwater NWR and Fallon NWR, in combination with any revisions to the boundary of Stillwater NWR could potentially affect the local economy. The most direct economic effects of changes would be on livestock grazing permittees. Changes in recreational opportunities could also affect the local economy.
- **Potential Effects on Naval Air Station-Fallon Operations.** The U.S. Navy expressed concern that a boundary revision of Stillwater NWR could potentially affect their tactical training at the Bravo-20 Bombing Range. A 3,000-foot ceiling currently exists over Stillwater NWR, Fallon NWR, and Stillwater WMA, meaning that aircraft are not permitted to fly lower than 3,000 feet over this area. The 3,000-foot ceiling would not apply to any northward extension of Stillwater NWR.

## Further Analysis of Issues

The National Environmental Policy Act (NEPA) requires that all major issues identified during scoping be identified and described, but it does not specify which particular issues should be addressed in any given situation. The Refuge System Administration Act, however, does specify two issues that are to be addressed in the comprehensive conservation planning process: (1) identification and description of significant problems that may adversely affect populations and habitats of fish, wildlife, and plants within the planning unit, and the actions necessary to correct or mitigate such problems; and (2) identification, description, and facilitation of opportunities for wildlife-dependent recreation and a determination that allows levels and distribution of these uses to be compatible with refuge purposes. Of the issues identified during scoping, these two issues provided the primary guidance in developing objectives and strategies to achieve refuge goals and purposes, and are therefore described in more detail on the following pages. The compatibility determination process was incorporated into the comprehensive conservation planning effort and compatibility determinations are included in the Final CCP EIS (Appendix O).

### Significant Problems Adversely Affecting Fish, Wildlife, and Plants

To ascertain significant problems within the Stillwater NWR Complex, existing conditions were compared with desired, future conditions as reflected by refuge purposes and provisions of the Refuge System Administration Act (such as the directive to ensure the maintenance of biological integrity and environmental health). For the purposes of the Final CCP EIS and this summary, significant problems were defined as the underlying factors impeding the achievement of wildlife and habitat-related purposes of Stillwater NWR and Fallon NWR. The underlying factors hindering achievement of these purposes are:

- Reduced volume and altered timing of inflows, and flow restrictions in Stillwater Marsh, and along the lower Carson River and its delta, as compared to natural conditions;
- Prevalence and spread of nonnative plant and animal species in wetlands, riparian areas, and uplands;
- Altered chemistry of wetland inflows.

The first two are the major habitat issues that must be resolved or otherwise addressed in order to meet statutory requirements. Because several contaminants have been found to exceed thresholds associated with adverse effects to wildlife, they are also of concern. In addition to management implications, they also have implications to the potential boundary revision.

Several other factors have the potential to limit the Service's ability to achieve wildlife related purposes. One of these is the effects of human activity on wildlife and their habitat. Other problems that will continue to have adverse effects on wildlife on the refuges are land

use practices and activities that occur outside the refuges and throughout North, Central, and South America. Included are alterations to Carson River flow caused by agricultural, municipal, and industrial activities and Lahontan Reservoir, and habitat destruction, pollution, and pesticide use throughout the Western Hemisphere. These off-refuge problems cannot be addressed through refuge management, but need to be recognized when setting wildlife and habitat objectives. Even though they cannot be addressed on-refuge, the effects that these off-refuge problems have on refuge resources highlights the need for the Service to continue its involvement in water allocation and management issues in the Truckee-Carson River basins, development and implementation of international bird conservation initiatives, and other large scale efforts.

### **Opportunities for Compatible Wildlife-Dependent Recreation**

The Refuge System Administration Act requires the Service to (1) facilitate high quality and safe opportunities for wildlife-dependent recreation and (2) ensure that this is done in a way that is compatible with refuge purposes and the Refuge System mission.

These two requirements may at first seem to oppose each other because one involves facilitation of uses and the other involves constraints on uses, one viewed as positive and the other viewed as negative. However, a closer examination reveals that they complement each other. One of the dominant principles of refuge management is that, taken together, high quality wildlife-dependent recreational experiences depend on a rich diversity and abundance of wildlife and habitat. Without this resource, traditional uses of refuges could not be sustained. Additionally, continued use of refuges for wildlife-dependent recreation provides people with a better understanding and deeper appreciation of wildlife and the importance of conserving their habitat, which ultimately contributes to the conservation mission of the Refuge System through increased public support.

The direction provided in the Refuge System Administration Act and the Stillwater NWR purposes (P.L. 101-618) is very clear: opportunities for scientific research, environmental education, and other wildlife-dependent recreational uses are to be facilitated on Stillwater NWR. “The term ‘facilitate’ was deliberately chosen [for the Refuge System Improvement Act] to represent a strong sense of encouragement, but not a requirement, that ways be sought to permit wildlife-dependent uses to occur if they are compatible” (House Report 105-106). The Refuge System Administration Act also specifically requires that the priority general public uses of the Refuge System (hunting, fishing, wildlife observation and photography, and environmental education and interpretation) receive enhanced consideration over other general public uses in planning and management.

Conversely, high levels of human activity on refuges can diminish the benefits the refuge can potentially provide to wildlife. This is why compatibility determinations are such an important part of refuge management. A quote from the first Refuge Manual (as cited in USFWS 1999) shows that examining and attempting to resolve potential conflicts between wildlife and public uses is not a new issue for national wildlife refuges: “Public use of refuge

areas will in varying degrees result in disturbances to wildlife populations, but this adverse effect will be offset on many refuges by the public relations value of limited public use.” To make sure that the fundamental mission of the Refuge System is not materially impaired, some constraints need to be imposed on uses.

With these factors in mind, the ultimate aim of this planning process for public use management is to create a plan that truly facilitates and promotes an array of wildlife-dependent recreational opportunities, the combined effects of which the Service can confidently demonstrate are compatible and consistent with refuge purposes. This has proven to be a challenge given the limited amount of relevant site-specific biological data and the controversy that has resulted from exploring this issue. What is known from the available information is that hunting is generally compatible with refuge purposes and that boating has the greatest potential to hinder achievement of refuge purposes. Boating is not a priority public use of the Refuge System and tends to be more restrictive on refuges. An estimated 20 percent of hunters used boats during the 1999-2000 hunting season. The main impacts caused by boating stem from their noise, speed, and easy access to all open habitats.

## **ALTERNATIVES BEING CONSIDERED**

Five alternatives (compared to four in the Draft CCP EIS) were developed by the Service for the boundary of Stillwater NWR and the CCP for the Stillwater NWR Complex. Thus, each alternative consists of: a potential boundary, refuge goals, objectives, and management strategies. Major program areas are wildlife and habitat management, visitor services management, and cultural resource management.

Based on public scoping prior to release of the Draft CCP EIS, comments received, and meetings and consultation following the public comment period, the Service has decided that a fifth Alternative E will be analyzed in this Final CCP EIS. Alternative E is a composite of the range of Alternative options analyzed in the Draft CCP EIS, but will be structured following preferred Alternative C (option 2) as proposed in the Draft CCP EIS. The Service could have chosen to modify Alternative C based on public scoping and comment; however, enough changes to Draft Alternative C were considered from public comment to justify the development of a new Alternative. Part of the rationale for keeping both Alternative’s C and E in this Final CCP EIS is to allow the public to easily review what was presented and how their comments were incorporated. Alternative E is the Service preferred Alternative.

### **Factors Considered in Alternative Development**

Alternative boundary revisions and management approaches were shaped by a number of factors, including:

- Legal requirements for refuge management;
- Resource management principles and philosophies, including those identified during scoping;



- Existing plans and agreements;
- Assessments of existing and natural ecological conditions;
- Problems impairing the achievement of refuge purposes;
- Other comments and recommendations from the public during scoping;
- Future funding and staffing.

Differences between alternatives stem from differing management approaches identified during the scoping process, and thus, the alternative selected for implementation will define the broad management approach to be carried out for the life of the plan. Alternatives also differed in the way that public use would be managed on in the Stillwater NWR Complex.

A priority system for managing the Stillwater NWR Complex and other refuges (e.g., refuge purposes provide the primary direction for managing national wildlife refuges) is spelled out in laws and executive orders. It is this priority system that guided alternative development for the Final CCP EIS. According to pertinent laws and policy, the focus of the CCP, in order of priority, must be to:

1. Conserve fish, wildlife, plants, and their habitat in the manner specifically outlined in the purposes of Stillwater NWR, Fallon NWR, and Anaho Island NWR, the Refuge System Administration Act, international treaties, and other management authorities;
2. Provide opportunities for compatible wildlife-dependent recreational activities; and
3. Resolve other issues identified during scoping.

The Stillwater NWR boundary revision effort focused on delineating alternative boundaries that would, in order of priority:

1. Contribute to achieving the purposes of Stillwater NWR and provisions of section 206(a) of P.L. 101-618, which addresses the maintenance of a long-term average of 25,000 acres of primary wetland habitat in designated Lahontan Valley wetland areas; and
2. Resolve other issues identified during scoping.

## **Alternatives Considered in Detail**

The five alternatives that are considered in detail in the Final CCP EIS are summarized on the following pages and in Table 1. All of the alternatives would have several features in common, including:

- The status and management of private, county, and state inholdings that are within the approved boundaries of Stillwater NWR and Stillwater WMA, or within the proposed expansion of the approved boundary of Stillwater NWR, would not be affected by any boundary changes.

Table 3.1. Summary of the alternatives considered in detail.

	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Alternative E (preferred Alternative)
<b>Boundary</b> Stillwater NWR (acres of Stillwater WMA Federal land) Fallon NWR <b>Total</b>	79,570 ac. 65,603 ac. <u>17,848 ac.</u> 163,021 ac.	79,570 ac. 0 ac. <u>17,848 ac.</u> 97,418 ac.	137,504 ac. 0 ac. <u>0 ac.</u> 137,504 ac.	167,806 ac. 0 ac. <u>0 ac.</u> 167,806 ac.	137,504 ac. 0 ac. <u>0 ac.</u> 137,504 ac.
<b>Ave. Wetland Habitat Acreage</b>	14,000 ac.	14,000 ac.	14,000 ac.	14,000 ac.	14,000 ac.
<b>Ave. Annual Water Supply</b>	70,000 AF	70,000 AF	70,000 AF	70,000 AF	70,000 AF
<b>WILDLIFE/HABITAT MGMT.</b>					
Biological Focus	Key Species	Key Species	Natural Biodiversity	Natural Biodiversity	Natural Biodiversity with Adaptive Management
Focus of Habitat Mgt.	Needs of Key Species in the breeding season (primary) and fall/winter (secondary)	Needs of Key Species in fall/winter (primary) and breeding season (secondary)	Approximation of Natural Habitat Conditions (primary) and needs of key species (secondary)	Approximation of Natural Ecological Processes	Adaptive Management Approach based on a combination of simulating Natural ecological processes, the needs of key wetland dependent wildlife guilds, and the potential of existing wetland habitats
Hydrology - Pattern of Inflow  - Inflow Rate      Operational Maximum  - Diking  - Riparian Restoration  - Contaminants	Agricultural (imposed by Wetlands Water Rights EIS)  # 175 cfs # 450 cfs (existing capacity)  Existing  None Minimize	Fall Emphasis (and assumes carryover to spring)  # 150 cfs # to 450 cfs  Additional diking  Limited - Stillwater Slough Minimize	Modified Natural (modified to minimize nest flooding, and to ensure that wetland habitat is provided in the fall/winter)  # 450 cfs 800-1,000 cfs  Evaluate existing for possible targeted additions/reductions Moderate to high level Minimize	Natural  # 350 cfs >1,000 cfs  Reductions to simulate a more natural flow & geomorphology Moderate to high Minimize	Modified Natural with Adaptive Management  Approximately 400 cfs TCID System capacity  Evaluate existing for possible targeted additions Moderate to high level Minimize

	<b>Alternative A (No Action)</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>	<b>Alternative E (preferred Alternative)</b>
Average Wetland Habitat Acres in Stillwater Marsh - Spring - Fall/Winter	11,600 - 14,400 13,600 - 15,100	10,600 - 12,100 15,200 - 16,300	13,900 - 16,900 11,400 - 14,500	14,300 - 24,500 8,400 - 8,900	14,700 - 17,500 12,800 - 13,900
Prescribed Burning	Very Limited (<100 wetland acres/5 years)	Moderate (for key spp.;100-400 acres/year)	Limited (to provide for needs of key species;75-100 acres/year)	No prescribed burning	Moderate (to provide for needs of key species; 150 - 2000 acres/year)
Livestock Grazing	5,500-11,000 AUMs/yr - throughout Stillwater WMA - throughout Fallon NWR - Stillwater NWR sanctuary - no habitat objectives	500-1,000 AUMs/yr - agricultural areas for geese - reduce emergent vegetation	0-500 AUMs/yr - agricultural areas for geese - very limited to reduce emergent vegetation - goats & sheep in IPM - no cattle in riparian & uplands	0 AUMs/yr	0-500 AUMs/yr - agricultural areas for geese - very limited to reduce emergent vegetation - goats & sheep in IPM - no cattle in riparian & uplands
Revegetation	Continued on former farmland, & limited in riparian	Former farmland, & limited in riparian	Former farmland, & increased effort in riparian	Former farmland & riparian, w/ emphasis on natural revegetation	Former farmland, & increased effort in riparian
Farming for Waterfowl	None	300-400 acres (non-Service water rights needed)	200-300 acres (non-Service water rights needed)	None	200-300 acres (non-Service water rights needed)
Nonnative Vegetation Control	Limited	Moderate, cont'd use of mechanical & herbicides	IPM – mechanical, biological (goats, sheep, insects), water management, mechanical, fire, & herbicides	IPM – no herbicides, & limited mechanical	IPM – mechanical, biological (goats, sheep, insects), water management, mechanical, fire, & herbicides
Nuisance Animal Management - Raven & Coyote Control  - Muskrat Control	None to limited, to increase waterfowl production  Not currently managed as a control measure (muskrat trapping provides recreation and commercial opportunities)	Moderate, to increase waterfowl production  Similar to Alternative A	Limited (e.g., if demonstrated to limit natural production rates)  Minimize damage to water-control facilities and roads (and rarely to reduce grazing of emergent vegetation)	None  None	limited to moderate (e.g., if demonstrated to limit key species production rates)  Minimize damage to water-control facilities and roads, to reduce grazing of emergent vegetation, and to prevent disease outbreak

	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Alternative E (preferred Alternative)
Nuisance Animal Management - Carp Control	None to limited	Moderate, use of water management and chemicals	Limited to mod., use of water control and limited chemicals	None	Limited to mod., use of water control and limited chemicals
- Mosquito Control	None	None, but contingency plan would be developed in case of disease outbreak	None, but contingency plan would be developed in case of disease outbreak	None	None, but contingency plan would be developed in case of disease outbreak
Human Activity Impacts - Apportionment of Wetland habitat	1 <sup>st</sup> 500 acres to sanctuary  then the amount of sanctuary would be maintained as follows:  <div style="display: flex; justify-content: space-between;"> <div style="text-align: right;">Total Acres</div> <div style="text-align: left;">Amt in Sanct</div> </div> <div style="display: flex; justify-content: space-between;"> <div style="text-align: right;">&lt;4,000</div> <div style="text-align: left;">55-75%</div> </div> <div style="display: flex; justify-content: space-between;"> <div style="text-align: right;">&gt;4,000-11,000</div> <div style="text-align: left;">35-40%</div> </div> <div style="display: flex; justify-content: space-between;"> <div style="text-align: right;">&gt;11,000</div> <div style="text-align: left;">#30%</div> </div>	1 <sup>st</sup> 4,000 acres to sanctuary  then all remaining wetland habitat could be produced in the hunt area (except that an additional 500-1,000 acres of wetland habitat could be produced in the sanctuary)	1 <sup>st</sup> 4,000 acres to sanctuary  <i>Option 1:</i> next 3,000 acres to hunt area each additional 2,000 acres to: 1) general public use (500 ac.) 2) sanctuary (500 ac.) 3) hunt area (1,000 ac.) <i>Option 2:</i> each additional 5,500 acres to: 1) general hunt area (2,500 ac.) 2) primitive hunt area (2,500 ac.) 3) sanctuary (500 ac.)	1 <sup>st</sup> 4,000 acres to sanctuary  each additional 3,500 acres to: 1) gen. public use (1,000 ac.) 2) hunt area (2,000 ac.) 3) sanctuary (500 ac.)	1 <sup>st</sup> 3,000 acres to sanctuary 2 <sup>nd</sup> 3,000 acres to hunt area  Additional acreage will be apportioned equally between the hunt area and sanctuary until the full 5,000 acres of sanctuary habitat is hydrated.
- Wetland Units in Sanctuary	All units south of Division Road	All units south of Division Road	<i>Option 1:</i> Stillwater Point Reservoir, Upper Foxtail Lake, West Marsh, & Lead Lake <i>Option 2:</i> All units south of Division Road, except Cattail Lake	All units south of Division Road	All units south of Division Road and east of Hunter Road

	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Alternative E (preferred Alternative)
Human Activity Impacts (cont.) - Wetland Units in Restricted- Access Areas	None	None	<i>Option 1:</i> None <i>Option 2:</i> West Marsh & Swan Lk.	None	No Boats allowed on Swan Lake, the north 1/3 of North Nutgrass, and the North 1/3 of Pintail Bay.
- Boating	Few restrictions (airboats & outboards permitted year-round)	No boating April 1 to August 1. No Airboats. Boats with outboards motors (up to 15 hp) permitted during hunting season (but regulate more closely)	No boating March 1 to August 1, except non-motorized in Goose Lake. Boat operation during remainder of the year would be restricted to 15-hp motors, and a 5-mph speed limit in open wetland units, except: <i>Option 1:</i> no boating in one unit <i>Option 2:</i> no boating in West Marsh & Swan Lake	No boats March 1 to August 1. Boat operation during remainder of the year would be restricted to non-motorized boats & boats with electric motors	No boating March 1 to August 1, except non-motorized in Swan Check. No wake, speed, or engine size restrictions unless a need is shown through monitoring. Non-motorized boating on all units except as described above. Outboard motorized boating on all units except as described above and Willow Lake, West Nutgrass, and Swan Check. Airboats allowed on Goose Lake, the south 2/3 of North Nutgrass, and the south 2/3 of Pintail Bay.
- Camping	Few restrictions	Camping limited to designated areas	Camping would be limited to designated areas, and only in fully contained units	No camping	A new boat ramp will be established at the northern portion of North Tule Lake  Overnight stays would be limited to designated areas subject to time restrictions. No unattended camp sites allowed.
- Road Closures	Existing	Existing	Existing closures, plus closure of North Road & Willow Dike Road	Existing, plus limited additional closures	Existing closures, plus closure of North Road & the southern 2/3 of Willow Dike Road



	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Alternative E (preferred Alternative)
<b>VISITOR SERVICES MGMT.</b> Hunting - Wetland Units Open to Waterfowl Hunting  - Days/Times - Special Features	All units north of Division Road, Indian Lakes, along D-Line Canal, & Battleground Marsh (occasional)  7 days/week, all day Few restrictions, airboats & other boats permitted in open area	All units north of Division Road, & 40% of wetland habitat in Fallon NWR (on rare occasions).  7 days/week, all day Similar to Alternative A, except that additional regulations would be imposed	<i>Option 1:</i> All units north of Div. Road (except Lead Lake & West Marsh), & along D-Line Canal (Indian Lakes not in boundary) <i>Option 2:</i> All units north of Div. Road & along D-Line Canal  7 days/week, all day <i>Option 2:</i> Addition of a primitive hunt area (remote location, walk-in only);	All units north of Division Road (except Goose Lake, South Nutgrass, Swan Check, and Tule Lake)  7 days/week, until noon Enhanced opportunities for hunters willing to walk-in or use non-motorized craft	All units north of Div. Road and all Federally owned properties in the existing Stillwater WMA to be included in the Alternative C boundary excluding Timber Lakes and portions of the Alves Property  7 days/week, all day Enhanced opportunities for hunters desiring different forms of hunting access
Environmental Education/Interpretation & Wildlife Observation/Photography  - Facilities  - On-site Environmental Education & Interpretation Program and Opportunities  - Off-site Environmental Education Program  - Observation & Photography Opportunities	Dirt roads, boat ramps, 2 portable toilets  Moderate, but limited by lack of facilities & from no separation from hunting  Moderate  Opportunistic (roads and a crude map are provided)	Same as Alternative A and: - visitor contact station & environmental educ. center - outdoor classroom - all-weather tour route - constructed wetlands - boardwalks and towers - trail at visitor contact station - modern restrooms - interpretive signs  Enhanced, but only limited separation from hunting (none in Stillwater Marsh)  Improved over Alt. A  Enhanced by improved facilities	Same as Alternative B and: - outdoor classroom in Stillwater Marsh - interpretive kiosks - wildlife observation trails (in marsh and along Carson River)  Much enhanced by facilities and designated site for environmental education outside of the hunt area  Same as Alternative B  Greatly enhanced by facilities & a designated area for non-hunting activities (under Option 1)	Same as Alternative C, and: - enhanced visitor facility at Stillwater Point Reservoir - additional trails  Greatly enhanced by facilities, designated area for non-hunting activities  Improved over Alt. B  Greatly enhanced by facilities & a designated area for non-hunting activities	Same as Alternative C and: - additional tour loop located around Upper Foxtail Lake (Development will be phased in over three years with monitoring initiated to assess human activity impacts impacts to wildlife)  No Change from Alternative C  Same as Alternative B  Same as Alternative C
Fishing	Permitted	Not permitted	Not permitted	Not permitted	Not permitted

	<b>Alternative A (No Action)</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>	<b>Alternative E (preferred Alternative)</b>
<b>Cultural Resources Mgmt.</b>	Basic protection measures	Basic protection measures	Basic protection measures, goals and objectives for cultural resources, & a staff archeologist	Same as Alternative C	Basic protection measures, goals and objectives for cultural resources, & a staff archeologist
<b>Anaho Island NWR</b>	Monitoring of colony nesters	Same as Alternative A	Same as Alternative A	Same as Alternative A	Same as Alternative

- The water rights acquisition program would continue until a long-term average of 14,000 acres of wetland habitat is being sustained on Stillwater NWR. It is anticipated that this will require an average of 70,000 acre-feet per year of wetland inflows from all sources of water, including acquired water rights, drainwater, leased water, groundwater, and spill water.
- Anaho Island NWR would be managed much as it has been in the past, with an emphasis on protecting the nesting colony of American white pelicans and other colony-nesting birds that use the island and monitoring the annual production of colony-nesting bird production and trends in their populations.

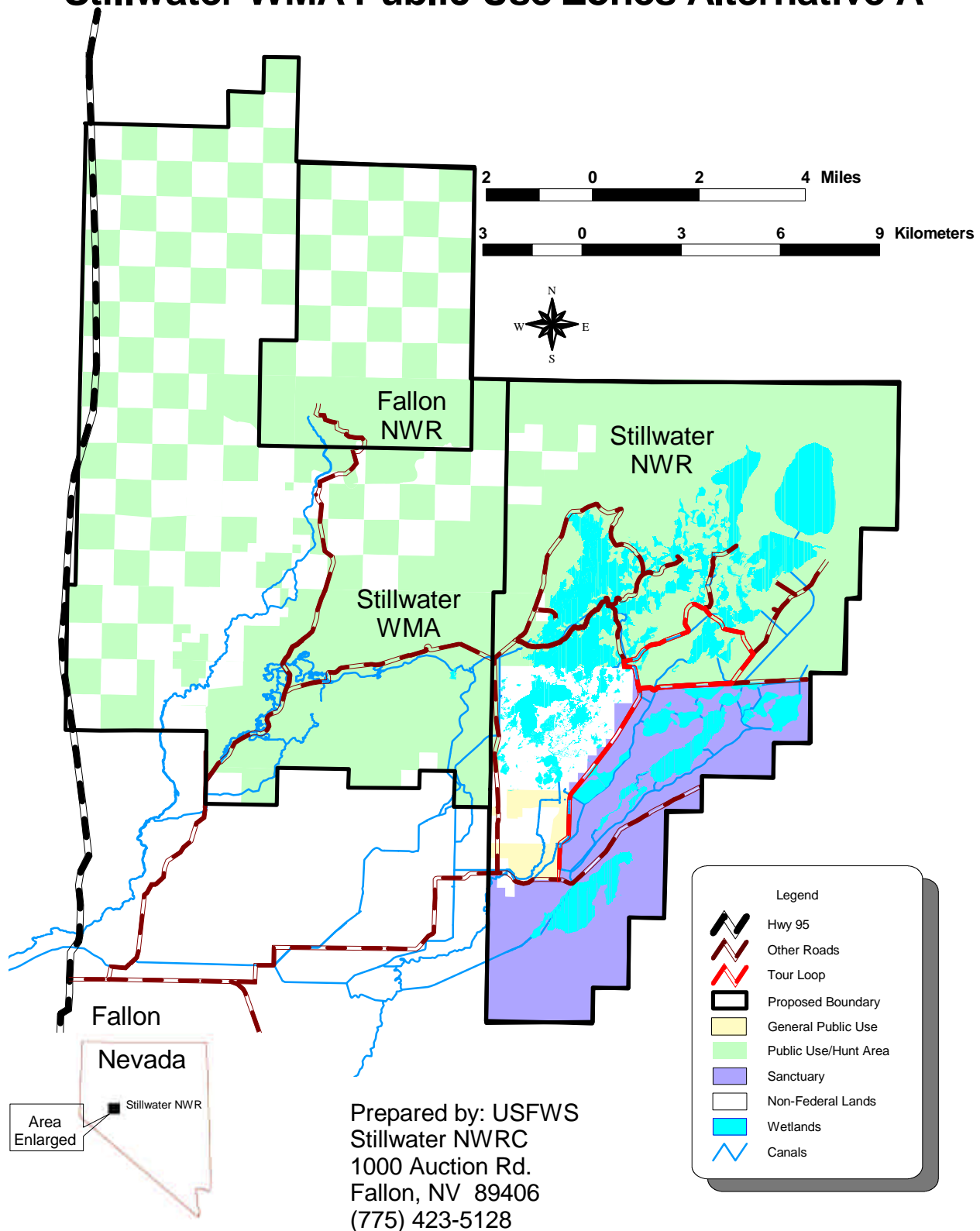
### **Alternative A (No Action Alternative)**

Boundaries of Stillwater NWR, Stillwater WMA, and Fallon NWR would remain the same as they are today. The Bureau of Reclamation has the primary withdrawal on lands within Stillwater WMA and Fallon NWR for Newlands Irrigation Project drainage purposes. The Service has extended provisions of the Tripartite Agreement, with respect to managing and administering these lands, through a cooperative agreement with the Bureau of Reclamation (U.S. Bureau of Reclamation 2002). The combined acreage of Stillwater NWR, Stillwater WMA, and Fallon NWR is 222,729 acres, of which 163,021 is under Federal ownership.

This alternative represents baseline management as outlined in the 1987 Management Plan for Stillwater WMA and modified by the Service's water rights acquisition program. Stillwater NWR, Fallon NWR, and Stillwater WMA would continue to be managed according to the 1987 Management Plan for Stillwater WMA and provisions of the 1948 Tripartite Agreement and, therefore, this alternative represents the No Action Alternative. It provides a baseline from which to evaluate changes proposed by any of the other alternatives. The focus of habitat management at Stillwater NWR, Stillwater WMA, and Fallon NWR under Alternative A would be on providing nesting, migration, and wintering habitat for waterfowl and other waterbirds. The water-delivery schedule would approximate agricultural delivery pattern as specified in the WRAP EIS. Revegetation of former farmland to native vegetation would continue. Other management practices permitted under this alternative, such as prescribed burning, saltcedar control, and predator control would be implemented on a limited basis.

Hunting would continue to be the priority public use of the area, although muskrat trapping would also be an emphasized use. The hunt area would comprise up to 72 percent of the available wetland habitat during October-January (Map 4). Opportunities would also be provided for other uses such as fishing, camping, wildlife observation, wildlife photography, environmental education, and horseback riding. Very few facilities are provided for these other activities, including the tour loop which is only passable in fair weather. The environmental education program would continue to grow and increase in emphasis to some degree. Livestock grazing would continue to be phased out in some areas, especially on Stillwater NWR, but within the boundaries of Stillwater WMA and Fallon NWR, livestock grazing would continue to be weighted more heavily than wildlife conservation. Livestock grazing and muskrat trapping opportunities have been managed more as commercial uses

# Map 4 - Stillwater NWR, Fallon NWR, and Stillwater WMA Public Use Zones Alternative A



than as wildlife and habitat management tools, which is consistent with the 1948 Tripartite Agreement and subsequent amendments.

Cultural resources would remain a basic component of land management at the Stillwater NWR complex. The Service, in consultation with the Fallon Paiute-Shoshone Tribe, would continue to manage cultural resources so they are preserved, and the strong tradition of archaeological and ethnographic research would continue.

## **Alternative B**

Under this alternative, only Stillwater NWR and Fallon NWR would be retained. The management and operation of the area within the Stillwater WMA would be conveyed to the jurisdiction of Bureau of Reclamation<sup>1</sup> or Public Land status, with the possible exception of the Indian Lakes area which may be transferred to Churchill County and ultimately to the City of Fallon or another entity (U.S. Fish and Wildlife Service 1996c). The Bureau of Reclamation's primary withdrawal on lands within Fallon NWR would be rescinded and replaced with a primary withdrawal by the Service. The acreage of Federal lands managed primarily for wildlife in the Lahontan Valley would decline by about 66,000 acres (40 percent). Under this proposal, the approved boundaries of Stillwater NWR and Fallon NWR, combined, would be about 107,954 acres, of which about 97,418 acres would be Federal. The acreage of non-Federal inholdings within the boundaries of Federal wildlife areas in the Lahontan Valley would decline by about 80 percent. This alternative focuses on providing fall and winter habitat for waterfowl and opportunities for waterfowl hunting on Stillwater NWR and breeding habitat for waterbirds on Fallon NWR. Much of the same management emphasis of Alternative A would be maintained in this alternative, except that fall and winter habitat for waterfowl would be emphasized over breeding habitat on Stillwater NWR. Water deliveries would be managed to create peak acreage in the fall and early winter to enhance waterfowl habitat and maximize the amount of wetland habitat during this season. On Fallon NWR, greater emphasis would be placed on providing breeding habitat for waterfowl and other waterbirds during years when adequate water is available, such as during precautionary releases or spills from Lahontan Reservoir. Control of saltcedar and noxious weeds would receive more attention, including on Fallon NWR, as would prescribed burning. Livestock grazing would be used as a management tool and would be reduced considerably from the level of livestock grazing that has occurred in recent years.

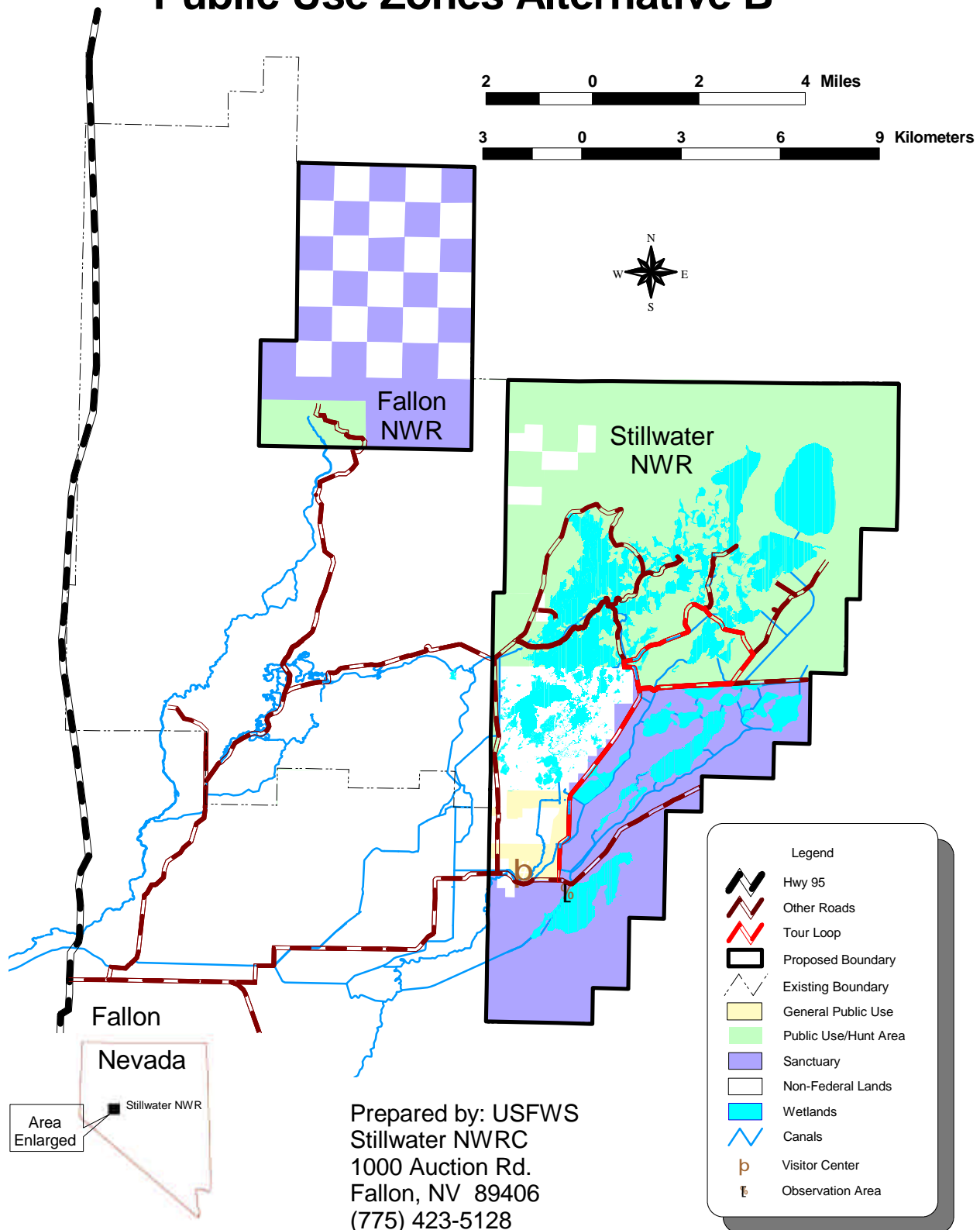
Hunting would continue to be the focal point of the public use program, except improvements would be made in providing opportunities for other wildlife-dependent recreational uses such as environmental education and wildlife observation. The hunt area would remain where it is under existing conditions (Map 5), but additional boating restrictions would be imposed. An exception would be Fallon NWR, on which up to 40 percent of the available fall wetland habitat would be open to hunting. Due to the effects of boating on wetland wildlife, several changes to boating regulations would be implemented. Under both options, a 15 horsepower limit would be enforced for motorboats (higher than the

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<sup>1</sup> Bureau of Reclamation currently holds the primary withdrawal on Federal lands within Stillwater WMA and Fallon NWR.



# Map 5 - Stillwater And Fallon NWR Public Use Zones Alternative B



existing 10 horsepower regulation) and airboats would not be permitted. These restrictions would minimize adverse effects on wetland wildlife while still allowing motorboat access to the marsh.

A visitor center, containing an environmental education center, would be constructed, the existing tour loop would be improved, and observation points and towers would be constructed. Opportunities for muskrat trapping would continue much as they were provided in the past, except that trapping would be used more as a management tool.

Fishing would not be permitted, primarily due to the high level of mercury contamination in the Lahontan Valley, for which an advisory was issued by the State of Nevada noting that eating any fish caught in the Lahontan Valley is not safe. If the health advisory is lifted, fishing would be reevaluated.

Cultural resources would continue to be managed as under Alternative A.

## **Alternative C**

Under this boundary revision alternative, the approved boundary of Stillwater NWR would be expanded to most of the lands that are now inside Stillwater WMA and Fallon NWR. Major habitats added to Stillwater NWR would be the lower Carson River and its delta marsh, the sand dunes along the southern edge of the Carson Sink, and the stabilized dunes and salt desert shrub habitat between the Carson River and Stillwater Marsh. In addition to lands already in Stillwater WMA and Fallon NWR, the boundary would expand to include six sections of land along the lower Carson River and 26 sections north of the existing Stillwater NWR. Although the size of Stillwater NWR would increase, the acreage of Federal lands managed primarily for wildlife in the Lahontan Valley would decline by about 25,517 acres. The most important lands with respect to refuge purposes and wetlands protection would be retained. Under this proposal, the approved boundary of Stillwater NWR would be about 172,254 acres, of which about 137,504 acres would be Federal. The acreage of nonFederal inholdings within the boundaries of Federal wildlife areas in the Lahontan Valley would decline by about 40 percent.

Under this alternative, the Service would manage the wetlands to approximate the area's natural biological diversity, as outlined in refuge purposes, which would greatly benefit breeding and migrating waterfowl, shorebirds, and other waterbirds as well as wintering waterfowl. Habitat objectives would focus on providing a range of habitat conditions in the marshes, with an emphasis on breeding habitat, as well as restoring and protecting riparian, wet meadow, and sensitive upland areas such as the dunes. The emphasis of water management would be mimicking the natural seasonal pattern of inflow, modified somewhat to minimize nest flooding and to provide fall and winter habitat for waterfowl and waterfowl hunting. Second to water management, control of saltcedar and noxious weeds would be a focal point of management in meeting habitat objectives. Management would recognize the important role that muskrats play in marsh ecology, but trapping would be used to minimize damage to water control facilities and roads. Livestock grazing would be curtailed substantially on refuge lands, and would only be used as a habitat management tool.

In addition to maintaining hunting as an integral part of the visitor services program, this alternative would provide enhanced opportunities for a range of wildlife-dependent public uses such as environmental education and interpretation, and wildlife observation and photography. Two options are being considered under this alternative for visitor services. Under both options, the auto tour route would be located closer to the entrance of Stillwater NWR than it is now, allowing quicker access to wetland habitats (Maps 6 and 7). Under Option 1, the tour route would allow birdwatchers, educators, and others to view wildlife outside the hunt area during the hunting season. The tour loop would be an all-weather road, equipped with pullouts, wildlife viewing sites, and interpretive facilities. A visitor center, containing an environmental education center, would be constructed under both options, and environmental education would be an added focal point of the visitor services program.

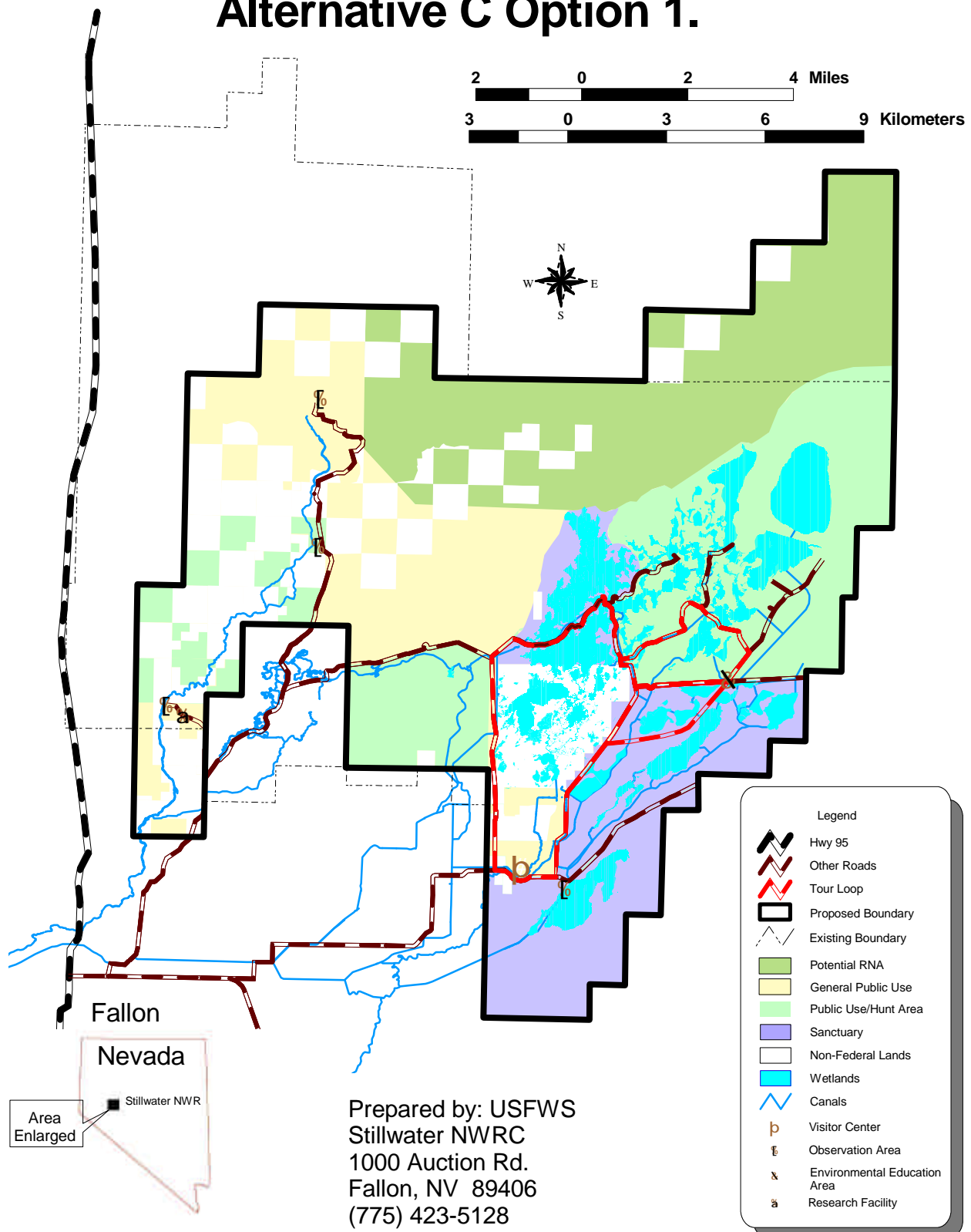
The hunt area under both options would be in the same location as it is today, with one exception under Option 1. Under Option 1, two wetland units (Lead Lake and Willow Lake) that are now within the hunt area would be converted to sanctuary in large part to make up for the sanctuary converted to the general public use area (nonhunted area) noted above (Map 6). Under Option 2, the hunt area boundary in Stillwater Marsh would remain as it now exists (Map 7). To provide a range of hunting experiences on Stillwater NWR and in the Lahontan Valley and to ensure that hunting remains compatible with refuge purposes, several changes to boating regulations would be implemented. Under both options, a 15 horsepower limit would be enforced for motorboats (higher than the existing regulations), airboats would not be permitted, and a 5 mile-per-hour speed limit over the water would be imposed to minimize adverse effects on wetland wildlife while still allowing access to the marsh using this form of transport. Under Option 2, a walk-in-only area would be provided, consisting of two wetland units (West Marsh and Swan Lake). As under Alternative B, fishing would not be permitted.

Under Alternative C, the cultural resource program would become more proactive than under Alternatives A and B. The goal of the cultural resource management program would be to manage cultural resources for the benefit of present and future generations, and an archaeologist would be added to the staff to help support this program.

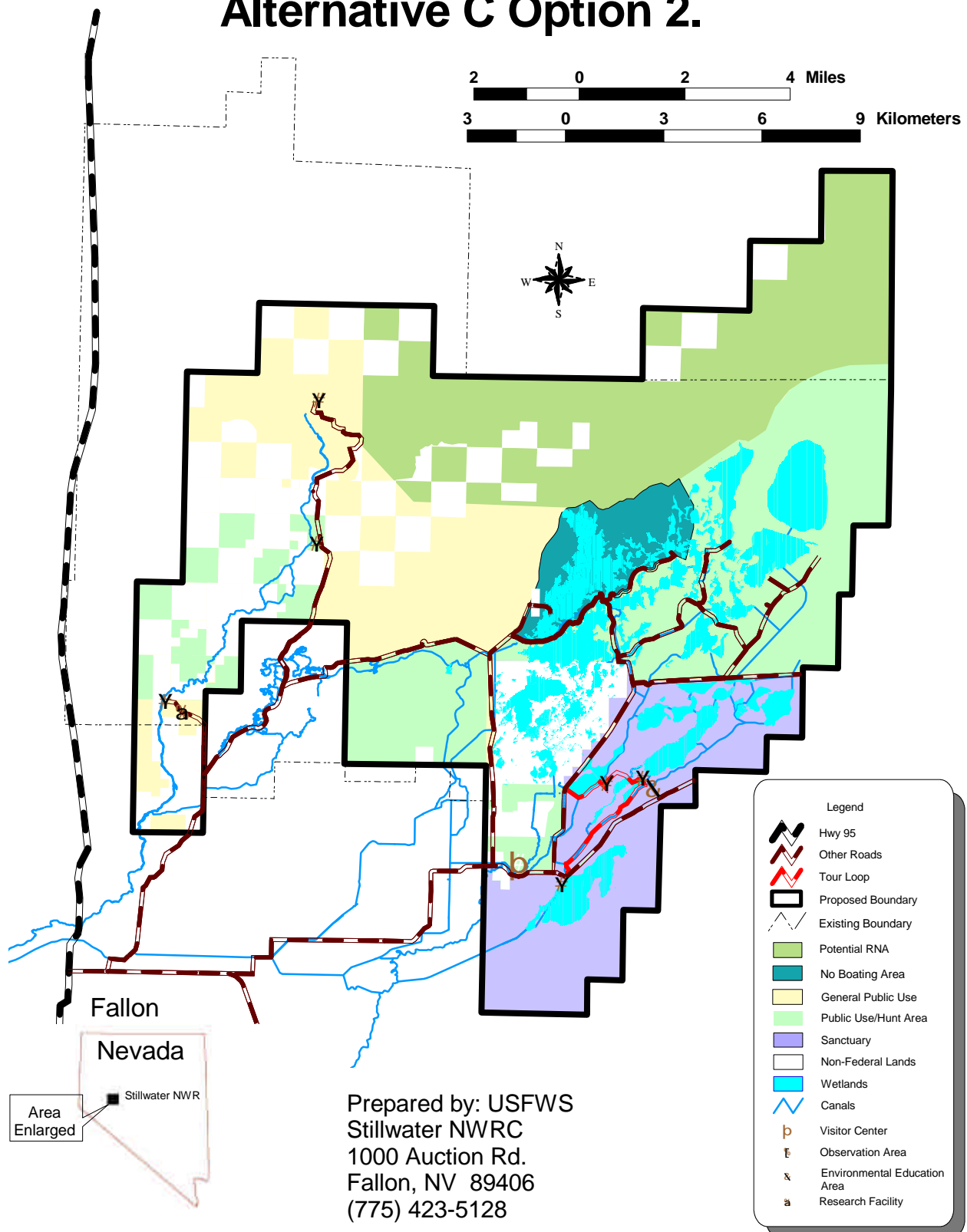
## **Alternative D**

Under this alternative, the boundary of Stillwater NWR would be expanded to include all of Stillwater WMA and Fallon NWR, except the Indian Lakes area, as well as the six sections of land along the lower Carson River and 26 sections north of the existing Stillwater NWR identified under Alternative C. Major habitats added to Stillwater NWR would be the lower Carson River and its delta marsh, the sand dunes along the southern edge of the Carson Sink, and the stabilized dunes and salt desert shrub habitat between Highway 95 and Stillwater Marsh, and the southwestern part of the Carson Sink, including the inlet of the Humboldt Slough. In addition to lands already in Stillwater WMA and Fallon NWR, the boundary would expand to include six sections of land along the lower Carson River and 26 sections north of the existing Stillwater NWR. Under this proposal, the approved boundary of Stillwater NWR would be about 231,731 acres, of which about 167,806 acres are Federal, which would increase the amount of Federal lands managed primarily for wildlife in the Lahontan Valley by about 3 percent. The acreage of nonFederal inholdings within the

# Map 6 - Stillwater NWR Public Use Zones Alternative C Option 1.



# Map 7 - Stillwater NWR Public Use Zones Alternative C Option 2.



boundaries of Federal wildlife areas in the Lahontan Valley would increase by about 7 percent.

Under this alternative, the Service would focus on approximating natural ecological processes as the primary means to restore the area's natural biological diversity. The aim of habitat management would be to approximate a natural seasonal pattern of water inflow into the refuge's wetlands, assuming that habitat and wildlife would respond accordingly. Considerable emphasis would also be placed on restoring riparian habitats and protecting sensitive upland areas. Noxious weed control would be limited to nonintrusive methods and would not include chemicals or nonnative biological controls. Management would recognize the important role that muskrats play in marsh ecology, and trapping would be limited to minimize damage to water-control facilities and roads. Livestock grazing would not be permitted on refuge lands.

As compared to the other alternatives, Alternative D would emphasize nonconsumptive visitor services. Environmental education and wildlife observation would become the focal point of visitor services management, as conditions would not be as favorable for waterfowl hunting as under other alternatives (lesser amount of wetland habitat acreage in the fall) except in spill years. A visitor facility, containing an environmental education center, would be constructed, the existing tour loop would be improved, and observation points and trails would be constructed. The tour loop would be an all-weather road, equipped with pullouts, wildlife observation points, and interpretive facilities.

During years when adequate water exists during October-January, opportunities for hunting would be provided. In these years of high water, hunting would be provided in the northern wetland units of the refuge (Map 8). To minimize impacts from boating, restrictions would be placed on boat use and some wetland units in the hunt area would be closed to boating. As under Alternative C, a 15 horsepower limit would be enforced for motorboats, airboats would not be permitted, and a 5 mile-per-hour speed limit would be imposed to minimize adverse effects on wetland wildlife while still allowing access to the marsh using this form of transport. As under Alternatives B and C, fishing would not be permitted.

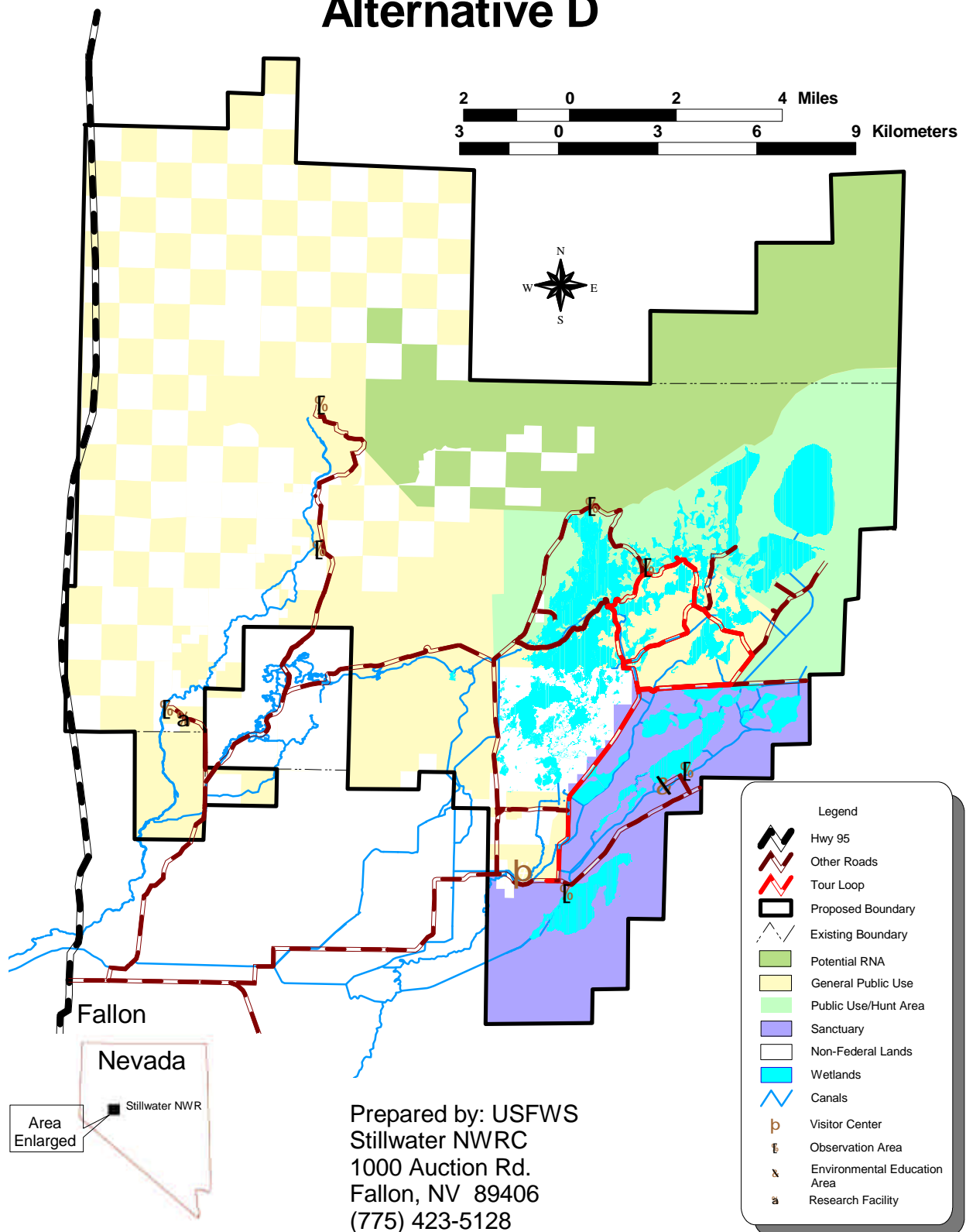
The cultural resource management program of this alternative would be similar to that of Alternative C.

## **Alternative E**

Alternative E would include the exact boundary configuration previously described for Alternative C. Under this alternative, the Service would manage the wetlands to approximate the area's natural biological diversity, as outlined in refuge purposes, which would greatly benefit breeding and migrating waterfowl, shorebirds, and other waterbirds as well as wintering waterfowl. Habitat objectives would focus on providing a range of habitat conditions in the marshes, with an emphasis on breeding habitat, as well as restoring and protecting riparian, wet meadow, and sensitive upland areas such as the dunes. An emphasis of water management would be placed on mimicking the natural seasonal pattern of inflow, which when compared to Alternative C, would be modified more to minimize nest flooding



# Map 8 - Stillwater NWR Public Use Zones Alternative D



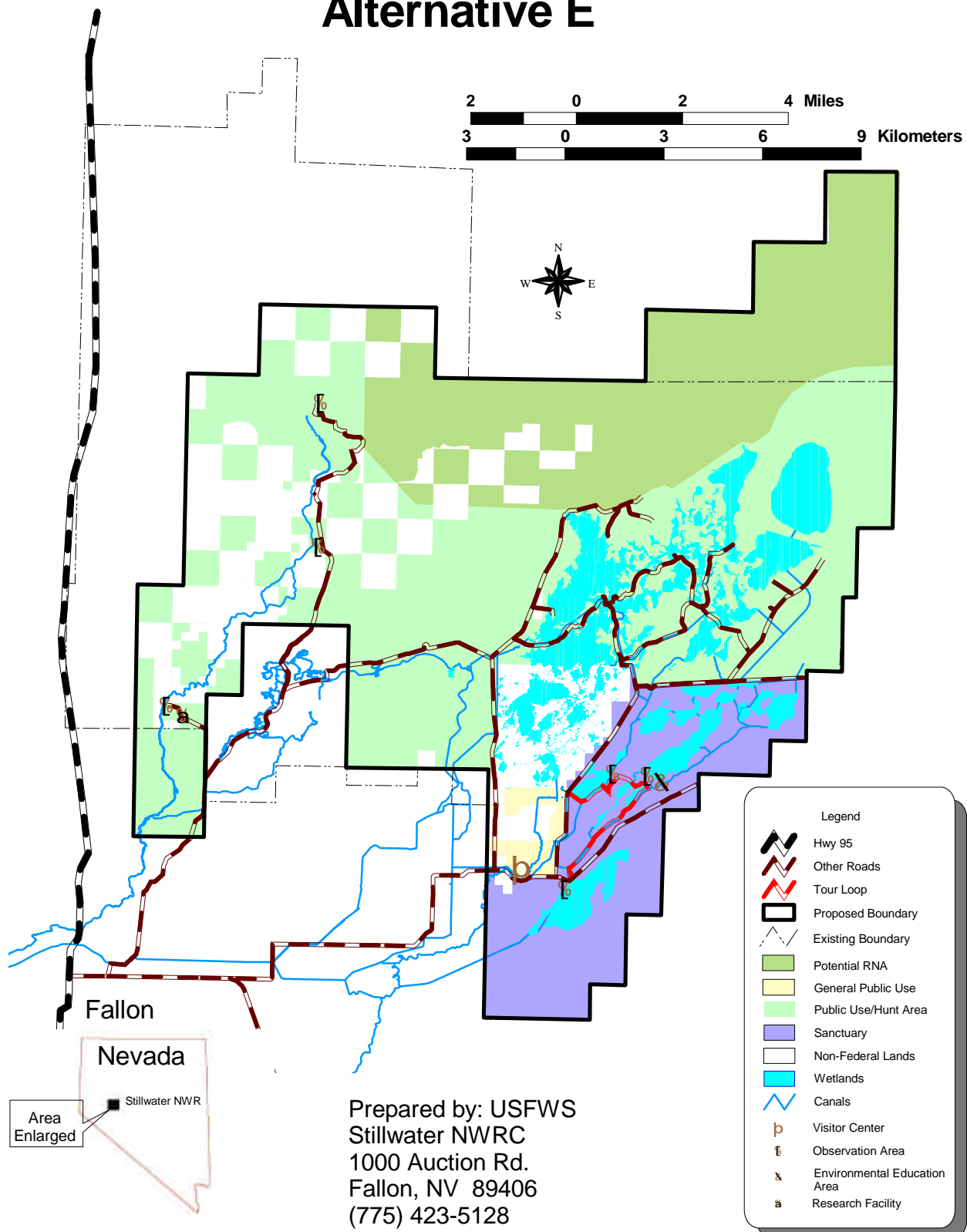
and to provide fall and winter habitat for waterfowl and waterfowl hunting. Second to water management, control of saltcedar and noxious weeds would be a focal point of management in meeting habitat objectives. Management would recognize the important role that muskrats play in marsh ecology, but trapping would be used to minimize damage to water control facilities, roads, and to enhance establishment and survival of emergent vegetation. Livestock grazing would be curtailed substantially on refuge lands, and would only be used as a habitat management tool.

In addition to maintaining hunting as an integral part of the visitor services program, this alternative would provide enhanced opportunities for a balance of wildlife-dependent public uses such as environmental education and interpretation, and wildlife observation and photography. The auto tour route would be located closer to the entrance of Stillwater NWR than it is now, allowing quicker access to wetland habitats (Map 9). A visitor center, containing an environmental education center, would be constructed under both options, and environmental education would be an added focal point of the visitor services program.

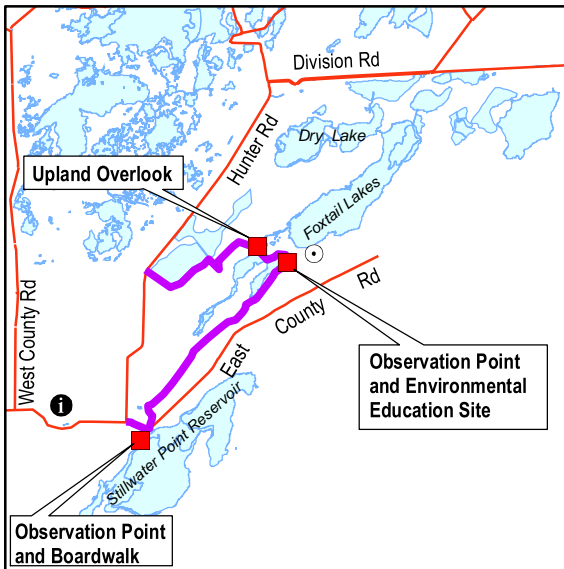
The hunt area under Alternative E would be in the same location as it is today. All units historically open to waterfowl hunting would still be open with the exceptions that no boats would be allowed on Swan Lake, north end of Pintail Bay, and the northeast corner of North Nutgrass. Non-motorized boats would be allowed in Swan Check, and all units open to boating. Airboats would be allowed in Goose Lake, South Nutgrass, open portion of North Nutgrass, and open portion of Pintail Bay. All other motorized boats would be allowed in Lead Lake, Tule Lake, Goose Lake, South Nutgrass, the open portion of North Nutgrass, and the open portion of Pintail Bay. (Map 10). Unlike Alternative C, there would not be a 15 horsepower limit, nor would there be a 5 mile-per-hour speed limit over the water. It is assumed under this Alternative that zonation of the various boating options would ensure that the needs of wildlife are met and that a range of access opportunities are afforded to waterfowl hunters. Hunting for big game, upland game, and other migratory game would be allowed per state law on all areas within the Alternative E boundary under Federal ownership with the exception of the wetlands south of Division Road, and in small areas at Timber lakes and the former Alves property. Discharge of rifles and pistols would not be allowed on Stillwater NWR.

Under Alternative E, the cultural resource program would become more proactive than under Alternatives A and B. The goal of the cultural resource management program would be to manage cultural resources for the benefit of present and future generations, and an archaeologist would be added to the staff to help support this program.

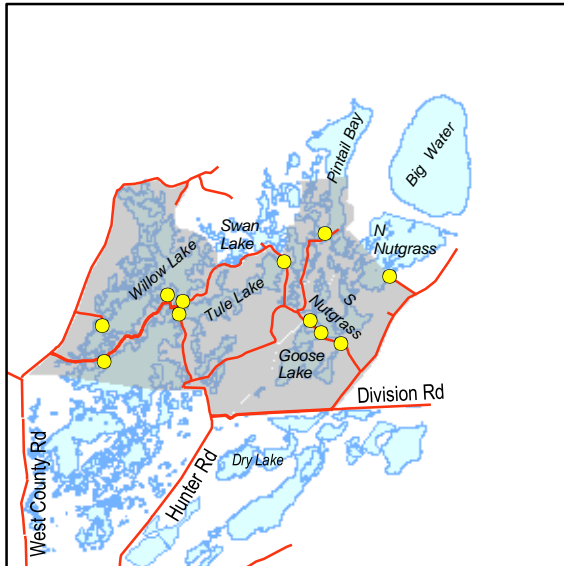
# Map 9 - Stillwater NWR Public Use Zones Alternative E



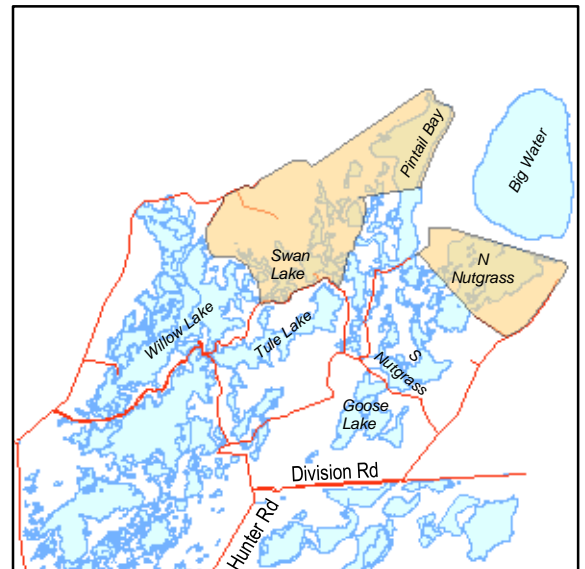
## MAP 10 Boating Access Options Alternative E



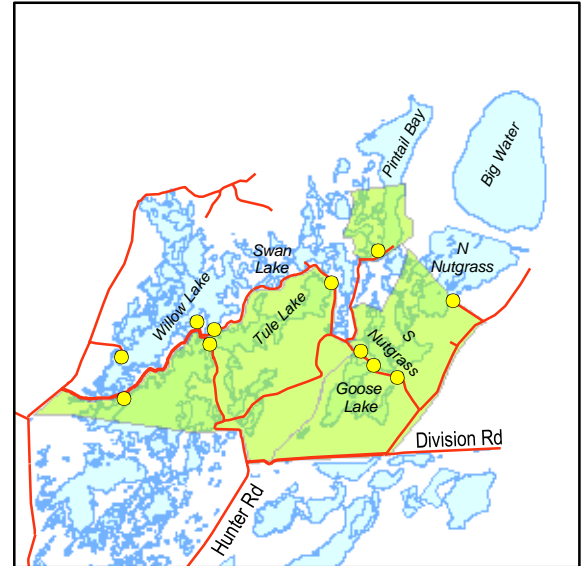
**Inset 1: Visitor Center and Tour Loop**



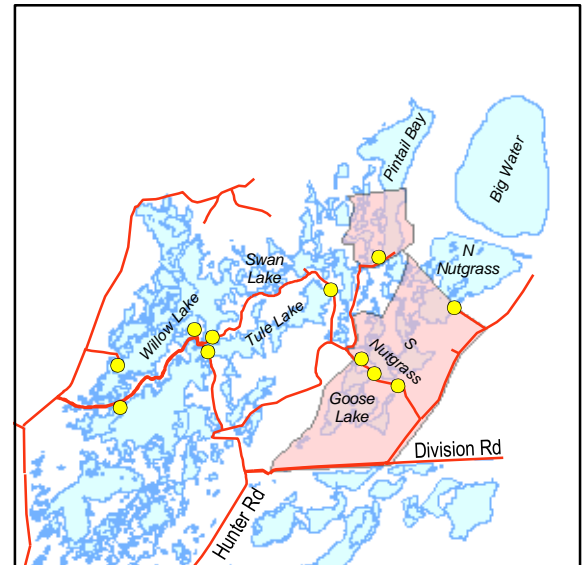
**Inset 3: Non-motorized Boats**



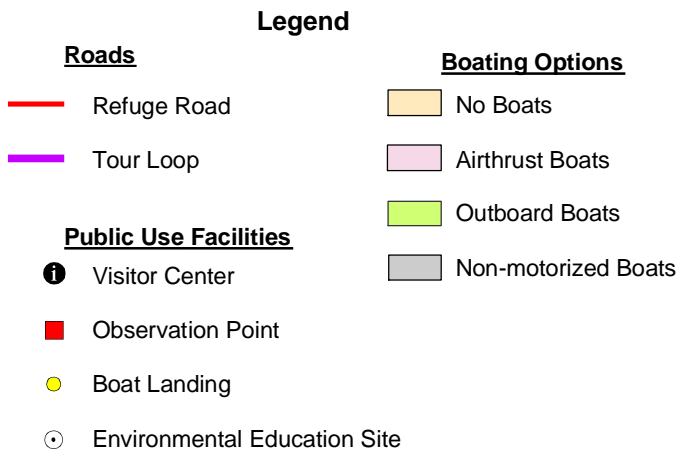
**Inset 2: No Boats**



**Inset 4: Outboard Motor Boats**



**Inset 5: Airstream Boats**



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## Summary of Alternatives Considered in Detail

# POTENTIAL IMPACTS OF THE ALTERNATIVES BEING CONSIDERED

This section, including Table 2, presents a summary of impacts that could potentially result from implementing the alternatives. Assessments were made of the potential effects of alternatives on existing and baseline conditions. Existing conditions are those conditions that exist now and that could happen in the near future with the continuation of existing management on the Stillwater NWR Complex and land use practices outside the complex. Existing conditions assume that the 20,000 acre-feet of water rights acquired for Stillwater NWR have been transferred to wetlands and that 17,000<sup>2</sup> acre-feet are available for wetland use on the refuge. However, at present, only about 13,500 acre-feet of water rights are permitted for delivery to the wetlands. The other acquired water rights are either under protest, recently filed, or pending application. Therefore, the existing conditions identified in this Final CCP EIS are overstated with respect to actual existing conditions. Due to the high year-to-year variability and the early stages of the water rights acquisition program, the existing hydrologic conditions presented in this Final CCP EIS are modeled to estimate changes in hydrologic conditions due to changes in management that would occur under different alternatives at completion of the water rights acquisition program.

Baseline conditions refer to those conditions that would result from continued management under Alternative A (No Action Alternative), including the completion of the ongoing water rights acquisition program, which may take another 15 years or more to complete. More specifically, baseline conditions assume that existing management of Stillwater NWR, Stillwater WMA, and Fallon NWR continue as it has in the recent past (as outlined in the 1987 Management Plan for Stillwater WMA), and that sufficient water is available to maintain a long-term average of 14,000 acres of wetland habitat (i.e., completion of the water rights acquisition program). Baseline conditions also assume that the efficiency targets identified in the Newlands Project OCAP (U.S. Bureau of Reclamation 1997) are being achieved.

Because baseline conditions will not be achieved for another 15 years or more, the changes from existing conditions to each alternative are presented. For each action alternative, this percent change is compared with the percent change estimated to occur under the No Action Alternative (baseline conditions; Alternative A). This is done to give readers an indication of the difference in change that would occur under the No Action Alternative as compared to the action alternatives. The effects of the ongoing water rights acquisition program (the same program under all alternatives) have already been analyzed in the WRAP EIS (U.S. Fish and Wildlife Service 1996a).

Environmental consequences are direct and indirect adverse and beneficial effects that would result from implementation of the alternatives. Direct consequences are those that are caused by the action, and occur at the same time and place. Indirect consequences are also caused by the

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<sup>2</sup> Water rights are purchased at a water duty of 3.5 or 4.5 acre-feet per acre and transferred to the wetlands at 2.99 acre-feet per acre by agreement. This results in a reduction in the amount of water delivered to the refuge from what has been purchased.

action, but occur later in time or are further removed from the action. In addition to assessing the potential impacts on the environment, an assessment is also made of the effects of alternatives on the Service's capability to meet relevant legal mandates.

The assessment of environmental consequences includes the potential consequences of alternatives on Newlands Project operations and other environmental resources in the EIS study area; physical components of the refuge complex environment (for example, water resources); fish, wildlife, plants, and their habitats; public uses on the refuge complex; cultural resources and Indian trust assets; Naval Air Station-Fallon operations; and the local socio-economy. Also assessed is the Service's ability to meet relevant legal and policy mandates under each alternative and potential limitations of the alternatives on a refuge manager's ability to manage. The following resources were examined during scoping and the impact analysis process and found not to be affected by any of the alternatives: geology, climate and meteorology, groundwater, and secondary wetlands.

## **Physical Environment**

### **Newlands Project Operations and Infrastructure**

Because of the large amount of water rights that will eventually be acquired for Stillwater NWR wetlands, altering the seasonal delivery pattern of acquired water has the potential to affect several components of Newlands Project Operations. For the parameters assessed in a computer model (Below Lahontan Reservoir model, Bureau of Reclamation), all of the alternatives would have nearly the same effects as would Alternative A, the No Action Alternative. An exception is the estimated change in hydroelectric power generation, for which Alternatives C and E would have greater adverse impacts than would Alternatives B and D in the long-term.

For the actions being considered in the Final CCP EIS, headgate demand would remain unchanged between all of the alternatives. Under Alternatives A, B, C, and E, headgate delivery in the Carson Division of the Newlands Project would decline over the long-term from existing conditions by an estimated 1.7 to 1.9 percent, with Alternative B at the higher end of this estimate and Alternative C at the lower end. This compares with Alternative D, which would result in a decline of an estimated 1.4 percent over the long-term compared to estimated baseline conditions. Project efficiency would increase under all alternatives compared to existing conditions (an estimated 63.8 percent). Under all Alternatives, Project efficiency would improve to about 71.0 percent by the completion of the water rights acquisition program.

June 30 storage volumes in Lahontan Reservoir would be similar among all action Alternatives ranging from a low of 225,410 acre-feet under Alternative D to a high of 230,890 acre-feet under Alternative B. November 30 storage volumes, as compared to Alternative A, would decrease slightly under Alternative B, but would increase under Alternatives C, D, and E; primarily based on the spring or summer emphasis of water delivery under these Alternatives.



Hydropower generation, according to the Below Lahontan Reservoir model, would also decline from existing conditions under all alternatives over the long-term. Under Alternatives A and B, hydroelectric power generation would decline by nearly 9 percent and under Alternatives C, D, and E, it would decline by about 11 percent. Changes to revenues associated with hydroelectric power generation would be slightly higher than these percentage reductions.

### **Lower Truckee River and Pyramid Lake**

As with Newlands Project operations, modifications in the seasonal inflow pattern to Stillwater NWR has the potential, in the long-term, to alter lower Truckee River flows and Pyramid Lake elevations, although effects would be slight under Alternatives B, C, and E. Alternative B could result in slightly lesser flow volumes in the lower Truckee River and slightly lower water levels in Pyramid Lake, as compared to Alternative A. Conversely, Alternatives C and E could result in slightly higher flow volumes in the lower Truckee River and slightly higher water levels in Pyramid Lake, than Alternative A. Effects of Alternative D would be similar to Alternatives C and E, except effects would be slightly more beneficial to the lower Truckee River and Pyramid Lake.

### **Air Quality**

Only minor, short duration, and localized reductions in air quality would be anticipated under Alternatives B, C, and E related to prescribed burning. Slight, immeasurable improvements could result from Alternative D due to no prescribed burning.

### **Refuge Land Base**

Each of the action alternatives (Alternatives B, C, and D) would result in considerable changes to the land base of the Stillwater NWR Complex. Alternatives B, C, and E would result in a reduction in the acreage of Federal wildlife areas in the Lahontan Valley. Alternative B would result in about 65,000 acres being shifted from a Service and Bureau of Reclamation administered wildlife management area to Bureau of Reclamation lands being administered by their contractor. Under Alternatives C and E, nearly 40,000 acres of Federal lands would shift from Federal lands set aside for wildlife management to lands generally administered by the Bureau of Reclamation. This would be counteracted by more than 15,000 acres of Bureau of Reclamation lands (currently outside the Stillwater NWR Complex boundary) being incorporated into Stillwater NWR, for a net reduction of about 24,000 acres in Federally owned lands dedicated to wildlife management in the Lahontan Valley. Indian Lakes would not be included in Stillwater NWR Complex under any of the action alternatives. The size of Anaho Island would not be measurably affected under any of the alternatives, except possibly Alternative D which could result in the water level of Pyramid Lake rising by an estimated 0.4 feet more than would occur under Alternative A. However, this would only result in less than an estimated ten fewer acres of land on Anaho Island.



## **Refuge Wetlands and Waters**

None of the alternatives would affect the 14,000 acre wetland habitat target for the Stillwater NWR Complex, although Alternatives B and D could affect the Service's ability to achieve this target. Alternative B would enhance efforts by reducing the annual wetland demand to sustain 14,000 acres of wetland habitat, whereas Alternative D would make it more difficult to achieve the targeted acreage. Alternative D might ultimately require additional water to be acquired above the amount specified in the WRAP EIS. This summary and the Final CCP EIS for the Stillwater NWR Complex CCP and boundary revision assumes that 70,000 acre-feet of water rights would be needed on average per year. Alternatives C and E annual water demand for 14,000 acres of wetland habitat would be similar to that of Alternative A and would not require any additional water as compared to the amount specified in the WRAP EIS. Water chemistry would not be affected markedly by the alternative selected. An estimated average of 13,500 acres of wetland habitat would be sustained in Stillwater Marsh.

Because the water rights acquisition program would be a component of all alternatives, they would all result in increased acreages of wetland habitat in all seasons of the year, except possibly during the fall and winter for Alternative D. Differences from the effects of the No Action Alternative would be as follows. Spring wetland habitat would be highest under Alternative D, with Alternatives C and E also producing more wetland habitat during the spring than would be produced under Alternatives A and B. During the fall and winter, Alternative B would produce the most wetland habitat, followed by Alternative A, E, and C, with Alternative D producing the least amount of fall wetland habitat.

## **Biological Communities**

Because biological communities of wetland systems are integrally related to the seasonal dynamics of wetland inflow and other factors affecting wildlife habitat, each alternative would provide for higher quality habitat for some communities and species at particular times of the year, while habitat for other communities and species would be of lesser quality compared to baseline conditions. After presenting each alternative's effects on the Service's ability to approximate natural biological diversity, the effects of each alternative on each major component of biological diversity are summarized.

### **Vegetation**

As compared to existing conditions, all types of wetland vegetation would increase in amount and diversity through additional water rights acquisitions under all of the alternatives considered in the Final CCP EIS. The effects that each alternative would have on marsh vegetation would vary depending on a variety of factors, including differences in timing of water inflow, rate and timing of wetland subsidence, acreages and depths by season, and water chemistry. Some alternatives would result in closer approximations than others to the natural vegetative diversity.

The water inflow scenario and water management strategies of Alternative B would, as compared to baseline conditions, provide deep and shallow emergent vegetation and moist-

soil vegetation that is flooded in the fall. As compared to baseline conditions, Alternatives C and E would tend to produce more shallow emergent vegetation, wet meadow vegetation, spring flooded moist-soil vegetation, possibly more fall flooded moist-soil vegetation, and slightly lesser amounts of submergent aquatic vegetation. Alternative D would tend to produce more shallow emergent vegetation, wet meadow vegetation, and spring flooded moist-soil vegetation than Alternative C, but would result in less submergent aquatic vegetation and no fall flooded moist-soil vegetation would be produced.

Riparian vegetation would be enhanced to the greatest extent under Alternatives C and E through the expansion of Stillwater NWR's boundary to include the lower Carson River (an additional three miles of riverine habitat) and increased restoration emphasis, including an integrated program to reduce saltcedar and other invasive exotic vegetation and elimination of cattle grazing along riparian corridors. Several plant communities now absent or in low distribution would be produced or their distribution increased. Restoration efforts under Alternative D would provide similar benefits to riparian vegetation, but would be slightly impaired by restrictions on biological and chemical controls. Riparian vegetation under Alternative B would continue in a degraded condition, as only four miles of the 27 miles now within the Stillwater NWR Complex would be retained.

Upland vegetation would be enhanced to the largest degree under Alternative D because this alternative would protect the largest amount of upland vegetation. Alternatives C and E would protect slightly less, but would still result in restoration of some upland plant communities through the elimination of livestock grazing in upland areas. Alternative B would protect the least amount of upland vegetation.

The connection between the Humboldt River System and the Carson River system, a unique ecological area, which occurs where the Humboldt Slough flows into the Carson Sink, would be provided long-term protection under Alternative D, but would be foregone under Alternatives B, C, and E.

## **Wildlife**

Overall, as compared to baseline conditions, Alternatives C and E would provide the most benefits for marsh and riparian wildlife during the breeding season and Alternative B would provide the most benefits for fall migrating and wintering birds using Stillwater Marsh. The amount and quality of wetland habitat for an array of breeding waterbirds would be considerably higher under Alternatives C and E as compared to existing and baseline conditions. Greater protection of the lower Carson River and more attention on restoring riparian habitat under Alternatives C and E would benefit migratory birds, small mammals, and other wildlife associated with this habitat. Under Alternative B, the amount of breeding habitat would be slightly higher than it would be under baseline conditions, although the amount and diversity of habitats would not be as high as under Alternatives C and E. Even though the acreage of springtime wetland habitat would be significantly higher under Alternative D, the peak would occur well after most birds have started nesting, and the acreage would decline rapidly during the summer months, thereby markedly reducing the quality of the habitat produced.

Alternative D would be the most favorable alternative for fall migrating shorebirds due to the vast expanse of wetland habitat experiencing declining water levels throughout the shorebird migration period. Alternative C would be the next most favorable for similar reasons, followed by Alternatives E, B, and A, respectively. Alternatives A and B would be the least desirable for shorebirds because water levels during the migration period would not fluctuate substantially and, where water levels change, they would generally be rising (Alternative B).

Alternative B would be the most favorable to fall migrating and wintering waterfowl. The highest concentrations of waterfowl on Stillwater NWR occur during September through November, and Alternative B would provide the highest amount of wetland habitat during this period, of the alternatives being considered. Alternatives A, C, and E would also improve habitat conditions for fall and winter waterfowl markedly compared to existing conditions. Alternative A would eventually provide more wetland habitat during the fall and winter, but management under Alternatives C and E (particularly E) would provide higher quality habitats for migratory waterfowl, which would tend to equalize the benefits to waterfowl during this period. Alternative D would have few benefits to fall and winter waterfowl, as compared to existing conditions.

Alternative D would be the most favorable alternative for upland species, and the benefits of Alternatives C and E would be close to this level. Both alternatives would protect, within one contiguous jurisdiction, a 25-mile long sand dune system at the southern edge of the Carson Sink. This dune system provides habitat for several species of endemic dune beetles and other species associated with dune habitats. Under Alternatives A and B, the dune system would extend through different jurisdictions.

No adverse impacts to endangered or threatened species, as compared to baseline conditions, would be anticipated under any of the alternatives being considered. Bald eagles, Federally listed as threatened, would benefit under all of the alternatives, except Alternative D. As compared to existing conditions, all of the alternatives would benefit cui-ui (an endangered species) and Lahontan cutthroat trout (a threatened species), both inhabiting the Truckee River and Pyramid Lake. Although differences in effects would be slight, cui-ui would benefit most from the implementation of Alternative D, followed by Alternatives E, C, A, and B, respectively. Similarly, Lahontan cutthroat trout would benefit most from Alternatives E, C, and D, followed by Alternatives A and B, respectively.

### **Natural Biological Diversity**

In general, Alternative C would most approximate the natural biological diversity of any of the alternatives with Alternative E fairly close in comparison. A majority of the water being delivered to Stillwater NWR wetlands in late winter or early spring would emulate a spring pulse of water followed by summer drawdown. This would contribute toward habitat and associated biological communities that this hydrologic regime produced under natural conditions. Fall and winter habitat was also a major component of the Lahontan Valley wetland system under natural conditions and would be provided under Alternative C; more so under Alternative E. Relatively low volume and flow rate of springtime flows would continue to be a limiting factor under Alternatives C and E.

Each of the other alternatives would highlight other aspects of the natural biological diversity and would diminish other aspects. For example, Alternative A would simulate year round wetland habitat, which existed at times under natural conditions during periods when the Carson River flowed directly into Stillwater Marsh. However, the biological communities produced by flushing flows that occurred during spring and by the seasonal fluctuations in water levels characteristic of the Lahontan Valley wetlands in most years, would be poorly simulated. Alternative B would enhance biological diversity during the fall and winter, but this would be a tradeoff with early season flushing flows, breeding habitat, and other conditions that would be produced through a spring pulse of water. Alternative D highlights the habitat conditions that make Great Basin wetlands ideal for shorebirds, that is, declining water levels during August and September. It would also to some extent enhance biological diversity during the late spring and early summer, but because of lower than natural winter flows, wetland habitat acreage would increase sharply during the nesting season, thereby flooding nests.

## **Recreation**

### **Hunting**

The size and location of the hunt area was a major concern to waterfowl hunters. The amount of area open to hunting varies by alternative. The amount of wetland habitat open to hunting under the different alternatives is a function of the boundary of the hunt area, the acreage of wetland habitat on the entire refuge during the hunting season, and the allocation of wetted acres among the hunt area, wildlife sanctuary, and general public use area (for alternatives including this zone). Compared to existing conditions, the amount of wetland habitat available for hunting during nonspill years would increase under all alternatives, except Alternative D. In the long-term (at the completion of the water rights acquisition program), Alternative B would result in the most wetland habitat available during the hunting season.

Of the two options being considered under Alternative C, Option 2 would provide the greatest benefits to hunters over the long-term, with an estimated increase in huntable fall and winter wetland habitat of about 50-80 percent over the amount of wetland habitat available for hunting under existing conditions in a full allocation, nonspill year (an estimated 6,000 to 7,400 acres). Increases under Option 1 of Alternative C would be an estimated 10 to 20 percent over existing conditions. In spill years (about one of four years), the amount of wetland habitat available for hunting would be similar for Alternatives A, B, and Option 2 of Alternative C. Available hunting opportunities would decline from existing conditions under Alternative D. Additional boating restrictions under Alternatives C and D could enhance the hunting experience for some hunters while it would impair the opportunity for other hunters. Alternative E would allow hunting on the same areas as under Alternatives A and B; however, there would be slightly less overall acreage available for hunting under Alternative E.

The year to year reliability of Stillwater NWR for providing suitable hunting conditions, compared to existing conditions and past conditions, would continue to increase under all of

the alternatives, except Alternative D. In the past, the amount of wetland habitat available for hunting varied tremendously from year to year, from less than 1,000 acres in some years to over 10,000 acres in other years. This resulted in the number of hunter visits fluctuating widely, from less than 800 in some years to over 10,000 in other years. Under Alternatives A, B, and E, it is estimated that the amount of wetland habitat open to hunting would exceed 8,000 acres in 8-9 out of 10 years, with the remaining 1-2 years having more than half this amount. Under Option 2 of Alternative C, it is estimated that wetland habitat open to hunting would exceed 6,000 acres in 8-9 out of 10 years, with the remaining 1-2 years having at least half this amount. In all of these alternatives, the amount of wetland habitat open to hunting would be as high as 10,000 or more acres in 2-3 years out of 10, as has occurred in the past due to spills. Under Option 1 of Alternative C, the amount of wetland habitat open to hunting would be at least 4,500 acres in 8-9 out of 10 years, with acreages reaching 7,000 or more in spill years. In most years under Alternative D, it is estimated that there would be less than 1,500 acres in most years, with up to 6,000 acres of open habitat in 2-3 years out of 10.

### **Environmental Education and Interpretation**

All action Alternatives (B, C, D, and E) would enhance environmental education opportunities as compared to baseline conditions (Alternative A). Option 1 of Alternative C and Alternative D would enhance the environmental education and interpretation program to the largest degree. For example, Option 1 of Alternative C would provide a higher quality, year-round tour loop closer to the entrance of Stillwater NWR and would provide wetland-related environmental education opportunities outside the hunt area. Option 2 of Alternative C and Alternative E would also provide a high quality tour loop close to the refuge entrance, but it would not be open during the hunting season, except on a limited basis, and it would not access as much wetland habitat as would the tour loop of Option 1. Alternative D would provide additional opportunities, especially during spring and early summer. However, wetlands along the tour loop would be further from the refuge entrance, and less wetland habitat would be available for viewing during the late summer, fall, and winter.

### **Wildlife Observation and Photography**

Alternatives B, C, D, and E would enhance wildlife observation and photography opportunities above those provided under baseline conditions (Alternative A). Option 1 of Alternative C and Alternative D would enhance wildlife observation opportunities to the largest degree. Option 1 of Alternative C would provide a higher quality tour loop closer to the entrance of Stillwater NWR and would provide wildlife observation opportunities outside the hunt area. Alternative D would provide additional opportunities, but wetlands along the tour loop would be further from the refuge entrance. Option 2 of Alternative C and Alternative E would also provide a high quality tour loop close to the refuge entrance, as would Option 1, but it would not be open during the hunting season, and it would not access as much wetland habitat as would the tour loop of Option 1. Alternatives C, D, and E would provide the best viewing opportunities during the spring (breeding waterbirds) and late summer (shorebirds).

Construction of an all-weather tour route and viewing towers would enhance wildlife viewing opportunities under Alternative B, but other parts of the alternative would offset some of these additional opportunities. For example, viewing opportunities during the spring would be reduced because portions of Stillwater Marsh would be closed to public access during the breeding season and viewing opportunities during the fall and winter would continue to be hampered due to hunting throughout the portion of the marsh open to public access.

## **Fishing**

Fishing would not be permitted under any of the action alternatives. This would slightly reduce fishing opportunities in the Lahontan Valley because little fishing presently occurs on Stillwater NWR, Stillwater WMA, and Fallon NWR at present. Of major concern are conflicts with wetland management and waterbird production; however, there is also a health advisory against eating fish in the Lahontan Valley, due to mercury contamination.

## **Camping and Boating**

Opportunities for camping in the Stillwater Marsh area would be highest under Alternative A, and would be reduced considerably under Alternatives B, C, and E and would be completely eliminated under Alternative D. Under Alternative B, overnight stays would only be permitted during the hunting season at designated sites and, under Alternatives C and E, would be permitted year-round in designated areas. Reductions in camping could result in increased camping in other nearby areas, possibly including the Indian Lakes area, private entities and adjacent Bureau of Land Management lands. Overnight stays in support of wildlife-dependent public uses would be allowed in the short-term; however, the Service would evaluate off-refuge alternatives. To the extent that suitable off-refuge locations are found through agreement with other Federal and private entities, camping would be phased out under all Alternatives.

Alternative A would similarly provide the most boating opportunities during the hunting season and throughout the year. Under Alternative B, boating opportunities would be reduced somewhat because airboats would not be permitted, motorboats would be limited to 15 horsepower, and boating by the public would not be permitted from the end of the hunting season through July 31. Alternative C could reduce boating opportunities further through the implementation of a 5 mile-per-hour speed limit, and one to three units closed to motorized boating. Boating opportunities would be significantly reduced under Alternative D because boating would be restricted to motorless craft and because of lower acreages of wetland habitat during the hunting season. Alternative E would allow boating as it has been allowed in the past with certain wetland units designated as no boating, nonmotorized boating, motorized boating, or airboat allowed units. No engine size or speed restrictions would be enforced; however, airboat operation would require a special use permit issued by the refuge.

## **Other Uses**

Alternative A would provide the most opportunities for other uses such as horseback riding, picnicking, swimming, and trapping. These are non-priority public uses of the Refuge



System. Under all action alternatives, activities occurring on the Indian Lakes area (where most of the “other uses” occur) would presumably continue as they have in the recent past. Actions being considered in the Final CCP EIS would not affect these activities, as the boundary revision alternatives would not include the Indian Lakes area. Because Alternative B would include the least amount of land in national wildlife refuge status, it would have the least impact to the other uses, whereas Alternatives C, D, and E would have the most impact. In the latter three alternatives, horseback riding, mountain bike riding, and street-legal vehicles would be permitted, but would only be allowed on open roads.

## Cultural Resources and Indian Trust Assets

Under Alternative A, the Service would continue to provide a required level of protection of cultural resources for its cultural resource management program, except as funds become available for additional work. Alternative B would be similar except that the addition of a law enforcement officer would enhance protection of these resources. Under Alternatives C and D, and particularly under Alternative E, the Service would place additional emphasis on cultural resources and they would be more effectively protected. No adverse impacts to Indian trust assets would occur under any of the alternatives.

## Socio-Economics

With respect to anticipated changes in hunting, other recreation, livestock grazing, and muskrat trapping on Stillwater NWR, Stillwater WMA, and Fallon NWR, implementation of Alternatives C and E would result in a net benefit to the local economy of an estimated \$88,000 to \$200,000, which is a 5-12 percent increase above the contribution estimated for Alternative A at the completion of the water rights acquisition program. Although revenues from livestock grazing and muskrat trapping would be reduced on the Federal lands now encompassed within the Stillwater NWR Complex, revenues from general recreation would be anticipated to increase. Implementation of Alternatives B and D would result in an anticipated reduction in contributions to the local economy, and estimated 1-2 percent reduction (Alternative B) and 2-10 percent reduction (Alternative D). Benefits associated with general recreation would be highest under Alternative D, but these benefits would be more than offset by reductions in hunting, livestock grazing, and muskrat trapping. Benefits under Alternatives C and E would be offset and reductions under Alternatives B and D would be worsened by reductions in hydroelectric power generation at the New Lahontan Power Plant.

## Naval Air Station-Fallon Operations

Alternatives C, D, and E would result in the northern boundary of Stillwater NWR moving six miles closer to the Bravo-20 Bombing Range. This bombing range is used by the Naval Air Station-Fallon for tactical combat training and the Navy had expressed concerns about the effects of revising Stillwater’s boundary on these operations. Because the boundary of the 3,000-foot ceiling that now exists over Stillwater NWR and Fallon NWR would not be moved with any northward expansion of Stillwater NWR, the boundary revision and ensuing management of these lands would not impair Naval Air Station-Fallon operations. An existing memorandum of understanding would be modified to formalize this agreement between the Navy and the Service.



## Ability of the Fish and Wildlife Service to Meet Legal Mandates

Alternative E (followed closely by Alternative C) would, compared to the other alternatives being considered, provide the best framework for the Service to meet legal mandates. This would include the highest potential for approximating natural biological diversity, fulfilling international treaty obligations with respect to wildlife, otherwise conserving wildlife, and providing opportunities for scientific research, environmental education, and other wildlife-dependent recreation. Alternative B would hold equally high potential for conserving wildlife, although toward different goals, except that a considerable amount of important habitats would not be protected within the refuges. Alternatives A and D would hold the least potential for meeting legal mandates.

A concern was raised that placing limitations on certain management tools could hinder a refuge manager's ability to achieve refuge goals and objectives. Alternatives A, B, and E would provide managers with the most flexibility and Alternative D would provide the least. Alternatives A and B would place few restrictions beyond those established through laws and Service policy, while Alternative E would allow for more flexibility than provided under Alternatives C and D. Although Alternative C would impose more restrictions on the use of some management tools, such as livestock grazing and prescribed burning, the constraints were designed as part of the strategy to emphasize management practices that mimic ecological processes and the conditions they naturally produced. Regarding the examples given in the preceding sentence, grazing and browsing by large herbivores, other than mule deer (still present), and fire shaped the habitats of the Lahontan Valley only to a limited degree under natural conditions.

Table 2. Summary of potential impacts of Alternatives A, B, C, D, and E.						
Resource/Issue	Existing Conditions	Baseline Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			Long-term Average Change from Baseline Conditions <sup>1,2</sup>			
PHYSICAL ENVIRONMENT (EIS Study Area)						
Irrigated Acreage Base (acres)	59,075	59,075	similar <sup>3</sup>	similar	similar	similar
Headgate Demand Deliveries	174,500 169,200	170,100 167,530	170,100 167,340	170,100 168,750	170,100 161,780	170,100 167,760
Project Efficiency (percent)	63.8	71.0	71.0	71.1	70.8	71.1
Lahontan Reservoir Releases	265,320	235,820	235,640	236,030	228,560	236,020
June 30 Storage	213,860	227,860	230,890	226,050	225,410	225,500
November 30 Storage	103,180	125,030	121,280	129,060	144,470	129,780
Hydropower Resources Power (GWh)	21,860	19,260	18,940	18,880	18,550	18,880
Revenue (\$)	893,600	782,910	738,160	671,220	724,490	700,350
Newlands Project Canal Capacities	EC <sup>4</sup>	increase needed	similar	similar-MH	SH-MH	similar-MH
Truckee Canal at Derby Dam	88,180	66,250	67,660	65,700	61,570	65,590
Supply to Lahontan Reservoir	49,750	30,510	30,900	30,070	26,410	29,990
Lower Truckee River at Derby Dam	475,760	497,440	496,900	497,480	502,190	497,610
Pyramid Lake Elevation (feet)	3,836.84	3,842.11	3,841.97	3,842.11	3,843.27	3842.14
Air Quality (micrograms/meter <sup>3</sup> )	EC	111	similar	similar	similar	similar
PHYSICAL ENVIRONMENT (ON REFUGE)						
Service Lands Acreage Base						
Stillwater NWR/WMA and Fallon NWR (acres)	163,021	163,021	97,418	137,504	167,806	137,504
Anaho Island NWR (acres)	(490 ac. in 1999)	245	<1% lower	<1% higher	2% lower	<1% higher
Refuge Wetlands						
Average Wetland habitat Acreage overall	8,000	14,000	14,000	14,000	14,000	14,000
Stillwater Marsh only	6,600	13,500	13,500	13,500	13,500	13,500
Wetland deliveries and incidental inflows (ave.)	39,900	70,000	70,000	70,000	70,000	70,000

<sup>3</sup> The estimated changes from baseline presented in this matrix were calculated for the sole purpose of illustrating differences in potential effects of each of the alternatives being considered.. The numbers are estimates only and are used as indices for assessing broad differences among alternatives.

<sup>4</sup> EC = existing conditions; BC = baseline conditions, SH = slightly higher than baseline conditions, MH = moderately higher than baseline, CH = considerably higher than baseline, SL = slightly lower than baseline, ML = moderately lower than baseline, CL = considerably lower than baseline.

Resource/Issue		Existing Conditions	Baseline Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
				Long-term Average Change from Baseline Conditions <sup>1,2</sup>			
Seasonal Wetland habitat (Stillwater Marsh)	Apr-Jun	8,000	12,900	11,300	15,300	20,500	16,200
	Oct-Dec	9,600	14,600	15,900	13,400	8,600	13,400
Flushing Action	Total Dissolved Solids Mercury	limited EC potential problem	limited BC <sup>1</sup> similar	similar similar similar	SH-MH <sup>1</sup> similar SH	SH-MH similar SH	SH-MH similar SH
BIOLOGICAL COMMUNITIES							
VEGETATION							
Marsh Plant Communities (Peak acreage / Season of Peak Acreage) <sup>5</sup>							
Submergent Vegetation		870-3480 / similar	2700-5400 / similar	1695-4770 / similar	2700-4725 / similar	2700-4300 / similar	2700-4725 / similar
Deep Emergent Vegetation		1305-2610 / similar	2025-4050 / similar	1695-4770 / similar	2025-5400 / similar	2025-6075 / spring	2025-5400 / similar
Shallow Emergent Vegetation		1305-2610 / similar	1350-3375 / similar	1130-4770 / fall	1340-4590 / spring	0-7175 / spring	1340-4860 / spring
Moist-Soil Vegetation		800-2880 / fall	645-2190 / fall	1695-4770 / fall	1340-3825 / spring	0-4100 / spring	1340-3825 / spring
Wet Meadow Vegetation		0-1600 / spring	0-1290 / spring	565-2385 / fall	1340-3825 / spring	0-6150 / spring	1340-3825 / spring
Wetland Shrub Vegetation		0-435 / similar	0-675 / similar	0-477 / fall	0-765 / spring	0-1025 / spring	0-765 / spring
Unvegetated Alkali Mudflat Habitat		435-870 / similar	675-1350 / similar	565-1590 / fall	670-2295 / late spring	0-3075 / late spring	670-2295 / late spring
Deep, Open-Water Habitat		0-80 / spring	0-129 / spring	0-113 / spring	134-612 / spring	172-1025 / spring	0-648 / spring
Playa Habitats (excl. Carson Sink)		0-8,900 / spring	0-8,900 / spring	0-4,520 / spring	0-6,450 / spring	0-8,470 / spring	0-6,450 / spring
Riverine/Riparian Plant Communities		27 miles protected No restoration	27 miles protected Minimal restoration	4 miles protected Minimal restoration	30 miles protected Maximum restoration	30 miles protected High-level of restoration	30 miles protected Maximum restoration
Desert Shrub Plant Communities		57,400 acres protected Depleted understories	57,400 acres protected Depleted understories	20,900 acres protected Enhanced understories	44,600 acres protected Enhanced understories	53,900 acres protected Enhanced understories	44,600 acres protected Enhanced understories
Agricultural Vegetation		0 acres	0 acres	300-400 acres alfalfa, small grains	200-300 acres alfalfa, small grains	0 acres	200-300 acres alfalfa, small grains

<sup>5</sup> Seasonal ranges in vegetation acreages are a component of vegetation dynamics. This table considers only an average range in acreage and the season when the peak acreage would be anticipated to occur.

Resource/Issue		Existing Conditions	Baseline Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
				Long-term Average Change from Baseline Conditions <sup>1,2</sup>			
Composition of Plant Communities		65 % native species	65-70 % native species	similar proportion, but different species	moderately higher	moderately higher	moderately higher
Invasive Exotic Vegetation		Abundant and increasing distribution of saltcedar and tall whitetop in wetlands and along riparian corridors	similar	slightly to moderately lower distribution of saltcedar and tall white top in marsh and meadows, but similar in riparian	moderately lower distribution of saltcedar and tall whitetop in marsh, meadow, and riparian habitats	slightly to moderately lower distribution of saltcedar and tall whitetop in marsh, meadow, and riparian habitats	moderately lower distribution of saltcedar and tall whitetop in marsh, meadow, and riparian habitats
WILDLIFE							
Birds							
Waterfowl	Waterfowl Use Days Waterfowl Produced	8 - 10 million 3,000 - 5,000	10 - 20 million 5,000 - 10,000	MH Similar	Similar - SL Similar - SH	SL - CL SL - CL	Similar - SL Similar - SH
Shorebirds	Peak Spring Population Breeding Population Fall Migration	50,000 EC 25,000-50,000	50,000 - 100,000 BC 25,000 - 100,000	Similar similar to SL similar to SH	MH similar to SH SH	CH CH SH	MH similar to SH SH
Wading Birds	Migratory Population  Breeding Population	EC  EC	BC  BC	similar (spring)to SL (fall) similar to SL	SH (spring) MH (fall) SH	MH (spring) similar (fall) MH	SH (spring) MH (fall) SH
White pelicans nests/year on Anaho Island		2,000 - 5,000	2,000 - 5,000	similar	similar	similar	similar
Other Waterbirds	Spring Fall	EC EC	BC BC	SH SH	MH Similar	CH ML	MH Similar
Passerines	Riparian Upland	EC EC	BC BC	similar similar	SH- MH similar to SH	SH-MH similar to SH	SH- MH similar to SH
Raptors	Bald Eagles (winter) Marsh Raptors Riparian/Upland Raptors	up to 30 EC EC	up to 50 BC BC	SH-MH MH similar	SH MH-CH SH-MH	similar to SL CH-MH SH-CH	SH MH-CH SH-MH
Other Bird Species		EC	BC	similar - SH	SH	SH	SH
Avian Diseases	number birds lost /year	1,000 - 10,000	1,000 - 10,000	similar	similar	similar - SL	similar
Mammals	Marsh Riparian Upland	EC EC EC	BC similar to EC similar to EC	similar similar similar	SH SH SH	SH-MH SH-MH SH	SH SH SH
Reptiles		EC	similar to EC	similar	SH	SH	SH

Resource/Issue	Existing Conditions	Baseline Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			Long-term Average Change from Baseline Conditions <sup>1,2</sup>			
Amphibians	EC	similar to EC	similar	similar - SH	SH-MH	similar - SH
Fish Native Game Fish (non-native) Carp and Mosquito Fish (non-native)	EC EC EC (common-abund't)	BC BC BC	Similar to SH SL-ML Similar to SL	SH - MH SL - ML Similar to SL	Similar to SL ML ML	SH - MH SL - ML Similar to SL
Invertebrates Aquatic (Diversity/Abundance) Riparian (Diversity) Dune (Abundance)	Moderate/Moderate EC EC	Moderate/High similar to EC similar to EC	SH/similar to SH similar similar	SH-MH/similar -SH SH - MH similar to SH	MH/similar SH - MH similar to SH	SH-MH/similar -SH SH - MH similar to SH
Endangered/Threatened Species On-refuge Truckee River basin (cui-ui index <sup>6</sup> ) Truckee River basin (Lahontan cutthroat trout)	EC 677,793 EC	up to 50 bald eagle 1,570,045 BC	similar 1,508,827 SH (spring) SL (fall)	similar 1,521,195 SL (spring) SH (fall)	similar 1,723,060 MH (spring) SH (fall)	similar 1,523,912 SL (spring) SH (fall)
Fish and Wildlife Toxicity	EC	BC	similar	similar	similar	similar
Natural Biological Diversity	EC	BC	similar - MH	MH	similar to SH	SH - MH
<b>RECREATIONAL OPPORTUNITIES</b>						
Hunting	EC	BC (MH than EC)	MH-CH	Option 1: ML Option 2: SL	ML-CL	similar to SL
Environmental Education and Interpretation	600-800 individuals reached/year through leader-cond'd activities	600-800 individuals reached/year through leader-cond'd activities	SH	MH	CH	MH
Wildlife Observation and Photography	EC	BC	SH	SH-MH	MH	SH-MH
Fishing Stillwater Marsh Indian Lakes	EC (very few anglers) EC	BC (no fishing) BC (similar to EC)	similar similar	similar similar	similar similar	similar similar
Camping	EC	BC (similar to EC)	ML	ML	CL	ML
Other Uses Stillwater Marsh/Fallon NWR area Stillwater WMA area	EC EC	BC (similar to EC) BC (similar to EC)	ML similar	SL ML	SL ML	SL ML
<b>CULTURAL RESOURCES/INDIAN TRUST ASSETS</b>						
Cultural Resources	Cultural resources adequately protected	BC (similar to EC)	SH (increased law enforcement)	MH (law enforcement, education, and more info)	MH (law enforcement, education, and more info.)	MH (law enforcement, education, and more info)

<sup>6</sup> The cui-ui index is a modeled estimate that refers to the number of adult female cui-ui at the end of a 95-year simulation period.

Resource/Issue	Existing Conditions	Baseline Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			Long-term Average Change from Baseline Conditions <sup>1,2</sup>			
Indian Trust Assets						
Fallon Paiute-Shoshone Indian Reservation	EC	BC (similar to EC)	similar	SH	SH	SH
Pyramid Lake (refer to Truckee River, Pyramid Lake and cui-ui resources addressed earlier)	EC	BC (SH than EC)	SL	similar - SH	SH	similar - SH
<b>COMMERCIAL HARVEST OF RESOURCES</b>						
Livestock Grazing On lands retained by Service Total (incl. lands not retained by Service)	7,200 AUMs 7,200 AUMs	7,200 AUMs 7,200 AUMs	60-80% lower 20-30% lower	90-95% lower 37-47% lower	100% lower 40-50% lower	90-95% lower 37-47% lower
Muskrat Trapping (number trapped annually)	4,000 - 40,000	4,000 - 40,000	similar	90% fewer	100% fewer	90% fewer
Commercial Fishery (Indian Lakes area)	Carp and Blackfish	Carp and Blackfish	similar	similar	similar	similar
<b>SOCIOECONOMIC RESOURCES</b>						
Commercial Use Revenues	\$68,200-124,000/year	\$68,200-124,000/year	10-25% lower	40-65% lower	45-75% lower	40-65% lower
Outdoor Recreation Expenditures	EC	\$740,000/year	1% higher	17% higher	5% higher	17% higher
Total Contribution to Local Economy <sup>5</sup>	EC	\$1,675,000/year	0.9-1.7% lower	5.2-11.8% higher	2.3-9.5% lower	5.2-11.8% higher
<b>NAVAL AIR STATION-FALLON OPERATIONS</b>	EC	BC (similar to EC)	similar	similar	similar	similar
<b>EFFECTS ON REFUGE MANAGEMENT</b>						
Habitat Management Tools Tools available Frequency of use Constraints on use (beyond laws and policy)	Large number Low-moderate Few	Large number Low-moderate Few	similar SH - MH SH	similar SH - MH MH	ML SL - similar MH	similar SH - MH MH
Ability of the Service to Meet Legal Mandates	Limited	Limited	SL	CH	MH	CH

<sup>5</sup> Does not include factors such as reductions in revenues from hydroelectric power generation.

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